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DEFENSE DOCUMENTATION CENTER ALEXANDRIA VA
ENVIRONMENTAL POLLUTION: AIR POLLUTION - EXHAUST GASES.(U)
JUL 77

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DDC/BIB-77/08

ENVIRONMENTAL POLLUTION

AIR POLLUTION - EXHAUST GASES

A DDC BIBLIOGRAPHY

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Cameron Station

Alexandria, Va. 22314

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<table border="0"> <tr> <td>*Bibliographies</td> <td>Hydrocarbons</td> <td>Jet Engines</td> </tr> <tr> <td>*Exhaust Gases</td> <td>Nitrogen Oxides</td> <td>Helicopter Engines</td> </tr> <tr> <td>*Air Pollution</td> <td>Passenger Vehicles</td> <td>Rocket Engines</td> </tr> <tr> <td>Waste Gases</td> <td>Aircraft</td> <td>Smoke</td> </tr> <tr> <td>Carbon Monoxide</td> <td>Aircraft Engines</td> <td>Environmental Pollution</td> </tr> </table>			*Bibliographies	Hydrocarbons	Jet Engines	*Exhaust Gases	Nitrogen Oxides	Helicopter Engines	*Air Pollution	Passenger Vehicles	Rocket Engines	Waste Gases	Aircraft	Smoke	Carbon Monoxide	Aircraft Engines	Environmental Pollution
*Bibliographies	Hydrocarbons	Jet Engines															
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*Air Pollution	Passenger Vehicles	Rocket Engines															
Waste Gases	Aircraft	Smoke															
Carbon Monoxide	Aircraft Engines	Environmental Pollution															
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This bibliography contains citations of reports dealing with exhaust gases, air pollution from exhaust gases emanating from ground to air transportation, exhaust systems of jet engines, helicopters, turbojet engines and rocket motors. Corporate Author-Monitoring Agency, Subject, Title and Personal Author Indexes are provided.																	

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6. PERFORMING ORGANIZATION NAME AND ADDRESS	
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FOREWORD

This bibliography consists of 220 selected unclassified and unlimited citations of reports on *Environmental Pollution: Air Pollution - Exhaust Gases*.

References were taken from entries processed into the Defense Documentation Center's AD data bank during the period of January 1953 to May 1977.

This bibliography supersedes DDC report bibliography on *Environmental Pollution: Air Pollution - Exhaust Gases*, AD-771 710, DDC-TAS-73-77, dated December 1973.

Individual entries are arranged in AD number sequence under the heading AD Bibliographic References. Computer-generated indexes of Corporate Author-Monitoring Agency, Subject, Title and Personal Author are provided.

BY ORDER OF THE DIRECTOR, DEFENSE LOGISTICS AGENCY

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Hubert E. Sauter

HUBERT E. SAUTER
Administrator
Defense Documentation Center

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 412 442

AEROJET-GENERAL CORP AZUSA CALIF

TOXIC HAZARDS EVALUATION OF TITAN II TEST FIRINGS:
METHODS AND RESULTS OF LABORATORY AND FIELD
INVESTIGATIONS. (U)

JUN 63 70P WETHERINGTON, R.; NOLE, D. A.;
ROBY, H.; LONGLEY, M. Y.; KENNEBECK, M.;
REPT. NO. REPT. NO. 2552
CONTRACT: AF33 616 7836
PROJ: 6302
TASK: 630205
MONITOR: AMRL TDR63 52

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON TOXIC HAZARDS OF
PROPELLANTS AND MATERIALS.

DESCRIPTORS: (*ROCKET MOTORS (LIQUID PRO, HAZARDS),
(*EXHAUST GASES, DETERMI), GUIDED MISSILE PERSONNEL,
NITROGEN, DIOXIDES, AIR POLLUTION, TETROXIDES, GAS
ANALYSIS, CHROMATOGRAPHIC, COOLANTS, CHEMICAL ANALYSIS,
SOILS, CARBON DIOXIDE, CARBON MONOXIDE INDICATORS,
CYANIDES, GRASSES, VEGETABLES, HYDRAZINES, HYDRAZINE
DERIVATIVES, INFRARED SPECTROPHOTO, MASS SPECTROSCOPY,
SAMPLERS, METEORO, EXPERIMENTAL DATA, GUIDED,
HYPERGOLIC, TEST FACILITIES, TEST, CAPTIVE TESTS,
CONTAMINATION, TOXICITY. (U)
IDENTIFIERS: TITAN (U)

TOXICOLOGICALLY SIGNIFICANT ENVIRONMENTAL
CONTAMINANTS NEAR TITAN II TEST-STAND FACILITIES
WERE STUDIED, WITH SPECIALLY DEVELOPED FIELD AND
LABORATORY TECHNIQUES, PRIMARILY TO DETERMINE THE
DEGREE OF HAZARD ASSOCIATED WITH EXHAUST CON
STITUENTS. FOR EXHAUST PRODUCTS THAT WERE
IDENTIFIED AND QUANTITATIVELY EVALUATED, IT WAS FOUND
THAT NORMAL TEST FIRINGS CREATE NO SIGNIFI CANT
PERSONNEL HAZARD IN TEST AREAS AND THAT, WITH PROPER
TREATMENT PROCEDURES, NO SIGNIFICANT WATER-POLLUTION
PROBLEMS ARE CREATED. A METHOD FOR DETERMINING
TITAN II TEST-FIRING CONTRI BUTIONS TO A
COMMUNITY-AIR-POLLUTION SITUATION WAS ALSO DEVELOPED. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 442 981

NATIONAL AERONAUTICAL ESTABLISHMENT OTTAWA (ONTARIO)

SHIP SMOKE STACKS,

(U)

JAN 63 33P THORNTON, C. P. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPRINT FROM DME/NAE QUARTERLY
BULLETIN 1962 (4). (COPIES SUPPLIED BY DDC)

DESCRIPTORS: (*SHIPS, EXHAUST GASES), (*EXHAUST GASES,
SHIPS), SHIP MODELS, GAS FLOW, SIMULATION, SMOKE, SHIP
DECKS, TEST METHODS, COMBUSTION PRODUCTS, DESIGN, WAKE,
VORTICES, VELOCITY, WIND, WIND TUNNEL MODELS, FINS,
AERODYNAMIC CHARACTERISTICS (U)
IDENTIFIERS: SMOKE STACKS (U)

A SERIES OF MODEL TESTS OF THE BEHAVIOR OF THE
SMOKE PLUMES OF THREE OCEANGOING SHIPS WAS COMPLETED
IN THE 15 FOOT VERTICAL LOW SPEED WIND TUNNEL. THE
SHIP STACK PROBLEM, THE EXPERIMENTAL TEST PROCEDURES,
AND THE PRESENT STATE OF SHIP SMOKE STACK DESIGN ARE
REVIEWED. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 601 025

CALIFORNIA UNIV LOS ANGELES

PNEUMATIC FUEL ATOMIZATION AS APPLIED TO AUTOMOBILE
AIR POLLUTION CONTROL. (U)

DEC 63 1V KOPA, RICHARD D. ;
REPT. NO. DE63 61

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON AIR POLLUTION
RESEARCH.

DESCRIPTORS: (*AIR POLLUTION, CONTROL), (*FUELS,
ATOMIZATION), (*ENGINE FUEL SYSTEMS COMPONENTS,
PNEUMATIC DEVICES), EXHAUST GASES, HYDROCARBONS,
COMBUSTION, CONTROL SYSTEMS, INTERNAL COMBUSTION
ENGINES, PERFORMANCE(ENGINEERING) (U)

THE PRINCIPLE OF PNEUMATIC FUEL ATOMIZATION AS
APPLIED TO INTERNAL COMBUSTION ENGINE CARBURETION WAS
CONCEIVED DURING RESEARCH ACTIVITY CONCERNED WITH
EXHAUST GAS RECYCLING AND ITS EFFECTS ON ENGINE
PERFORMANCE. THE GOAL WAS TO FIND A SOLUTION TO
THE ENGINE POWER SURGING PROBLEM, A PHENOMENON
RESULTING FROM EXHAUST GAS RECYCLING AS A METHOD OF
NITROGEN OXIDE CONTROL. THE BENEFIT APPEARS TO BE
TWOFOOLD, NAMELY, BESIDES ELIMINATION OF THE POWER
SURGING, THE EXPERIMENTS WITH PNEUMATIC FUEL
ATOMIZATION POINTED OUT A NEW WAY TO EFFECTIVE
CONTROL OF UNBURNED HYDROCARBONS. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 604 595

AMERICAN AIR FILTER CO INC LOUISVILLE KY

FEASIBILITY STUDY OF COLLECTIVE PROTECTION FOR
COMMAND POST VEHICLES.

(U)

DESCRIPTIVE NOTE: MONTHLY PROGRESS REPT. NO. 1, 1-31 JUL
64.

AUG 64 13P
CONTRACT: DA18 035AMC275A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*AIR POLLUTION, VEHICLES); (*VEHICLES,
DECONTAMINATION), FEASIBILITY STUDIES, DESIGN,
CONTAMINATION, PRESSURE, AIR CONDITIONING EQUIPMENT,
TEST EQUIPMENT

(U)

IDENTIFIERS: AIR PURIFICATION SYSTEMS

(U)

FIRST MONTH WORK CONSISTED OF PRELIMINARY MEETINGS
WITH CRDL; LITERATURE SEARCH OF STATE-OF-THE-ART
CONCEPTS AT CRDL LIBRARY; VEHICLE ACCESS
ARRANGEMENTS MADE AT FORT KNOX, KY. AND CRDL;
PRELIMINARY AIR FLOW TEST ON AIR LOCK; DESIGN AND
FABRICATION OF LEAKAGE TEST APPARATUS AND ADAPTERS;
U. S. GOVERNMENT PROPERTY MANUAL, PREPARED,
SUBMITTED AND APPROVED BY GOVERNMENT PROPERTY
ADMINISTRATOR. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 612 018

GENERAL DYNAMICS/ASTRONAUTICS SAN DIEGO CALIF

THE FAR FIELD OF A ROCKET EXHAUST JET AT LOW AND
MODERATE ALTITUDES, (U)

DFC 64 55P BOYNTON, FREDERICK P. ;
REPT. NO. GDA-DRE64-067 ,SR-1
CONTRACT: AF 19(628)-4360, ARPA ORDER-363
PROJ: AF-8662
MONITOR: AFCRL , 65-66

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*EXHAUST GASES, ROCKETS), (*JET MIXING
FLOW, EXHAUST GASES), TURBULENCE, FLUID MECHANICS,
CHEMICAL REACTIONS, MATHEMATICAL PREDICTION, PROGRAMMING
(COMPUTERS), BOUNDARY VALUE PROBLEMS, COMBUSTION,
ATMOSPHERES, JETS (U)
IDENTIFIERS: DEFENDER PROJECT, SHARPNESS, SHEAR (U)

A METHOD IS GIVEN FOR PREDICTING THE FLOW FIELD OF
A ROCKET EXHAUST PLUME AT DISTANCES FAR REMOVED FROM
THE NOZZLE EXIT AT ALTITUDES WHERE AFTERBURNING OF
THE EXHAUST IS APPRECIABLE. THE CALCULATION
COMBINES A FLUID MECHANICAL ANALYSIS OF TURBULENT
MIXING DUE TO LIBBY WITH THE ADIABATIC FLAME
TEMPERATURE CALCULATION OF BOYNTON AND NEU.
THE EDDY VISCOSITY IS DETERMINED FROM A
CONSIDERATION OF CONDITIONS UNDER WHICH COMPRESSIBLE
TURBULENT FLOWS APPEAR TO EXHIBIT SELF-PRESERVING
BEHAVIOR. INSTRUCTIONS ARE GIVEN FOR PREPARING
INPUT TO TWO COMPUTER PROGRAMS WHICH ARE BASED ON THE
ANALYSIS IN THE REPORT. IN TWO APPENDICES, IT IS
SHOWN HOW THE EDDY VISCOSITY CONSTANTS MAY BE DERIVED
FROM INCOMPRESSIBLE JET FLOW DATA AND A COMPARISON OF
THE RESULTS OF THE PRESENT CALCULATION WITH
EXPERIMENTAL WIND-TUNNEL ROCKET EXHAUST BEHAVIOR IS
GIVEN. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 618 572

MASSACHUSETTS INST OF TECH CAMBRIDGE

ATMOSPHERIC POLLUTION BY OZONE: ITS EFFECTS AND
VARIABILITY. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,

MAY 65 78P BRANDI, HENRY WILLIAM I

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SUPPLEMENTARY NOTE: AVAILABLE COPY WILL NOT PERMIT FULLY
LEGIBLE REPRODUCTION. REPRODUCTION WILL BE MADE IF
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DESCRIPTORS: (*OZONE, AIR POLLUTION), (*AIR POLLUTION,
OZONE), EXHAUST GASES, TOXICITY, PHOTOCHEMICAL
REACTIONS, UPPER ATMOSPHERE, TRANSPORT PROPERTIES,
MEASURING INSTRUMENTS, ELECTROCHEMISTRY, SAMPLERS, URBAN
AREAS, GAS FILTERS, CHROMIUM COMPOUNDS, OXIDES,
METEOROLOGICAL PHENOMENA, HALOGENS (U)
IDENTIFIERS: CHROMIUM TRIOXIDE (U)

SURFACE OZONE CONCENTRATIONS WERE MEASURED IN THE
BOSTON-CAMBRIDGE COMPLEX FOR THE MONTHS OF
NOVEMBER AND DECEMBER, 1964 AND JANUARY, 1965.
THE INSTRUMENTATION USED WAS A MAST OZONE METER
AND RECORDER; A CHROMIUM TRIOXIDE FILTER WAS FITTED
TO THE AIR INLET OF THE METER TO REMOVE NEGATIVELY
INTERFERING SULPHUR DIOXIDE. THE EFFECTIVENESS OF
THIS FILTER WAS REMARKABLY APPARENT IN THAT REMOVAL
OF THE FILTER CAUSED OZONE REDUCTIONS OF 50-100%.
THE OVERALL RANGE OF OZONE LEVELS FOR THE THREE
MONTHS WAS 0.1 TO 6.4 PPHMV (PART PER HUNDRED
MILLION BY VOLUME), WELL BELOW TOXIC LIMITS
DISCUSSED IN DETAIL IN THIS THESIS. THE AVERAGE
VALUES FOR EACH OF THE THREE MONTHS INDICATE A
POSSIBLE CORRELATION WITH THE TOTAL OZONE TREND.
VARIATION OF THE DAILY VALUES IS DISCUSSED WITH
SOME METEOROLOGICAL FACTORS AS WELL AS SOURCE
STRENGTH. SEVEN SIMULTANEOUS MEASUREMENTS OF SOME
OF THE HALOGENS, OBTAINED FROM A SEPARATE STUDY BY A
COLLEAGUE, ARE RELATED TO OZONE CONCENTRATIONS.
(AUTHOR) (U)

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AD- 620 940

WESTINGHOUSE RESEARCH LABS PITTSBURGH PA

DETECTION OF LIQUID CRYSTAL GASES (REACTIVE MATERIALS).

(U)

DESCRIPTIVE NOTE: FINAL REPT. FOR 1 FEB-12 NOV 64,
AUG 65 125P FERGASON, J. L. ; GOLDBERG, N.

N. ; JONES, C. H. ; RUSH, R. S. ; SCALA, L. C. ;

CONTRACT: AF30 603 3306

PROJ: 5534

TASK: 553402

MONITOR: RADC , TR-64-569

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*AIR POLLUTION, GAS DETECTORS), (*GAS DETECTORS, CRYSTALS), FATTY ACID ESTERS, CHOLESTERYL ESTERS, GASES, HYDROCHLORIC ACID, HYDROGEN COMPOUNDS, FLUORIDES, HYDRAZINE, DIMETHYL HYDRAZINE (1-1), NITROGEN COMPOUNDS, DIOXIDES, VAPORS, COLORS, ROCKET PROPELLANT (U)
IDENTIFIERS: FLUORIDES, HYDROGEN, LIQUID CRYSTALS (U)

A SET OF REACTIVE LIQUID CRYSTAL MATERIALS WERE DEVELOPED WHICH ARE CAPABLE OF DETECTING QUANTITIES (10 PPM OR LESS) OF HCL, HF, HYDRAZINE, UDMH, AND NITROGEN DIOXIDE. THE MATERIALS EXHIBIT A CHANGE IN COLOR TRANSITION TEMPERATURE UPON EXPOSURE TO THESE CONTAMINANT GASES OR VAPORS. EXCEPT FOR HF AND HCL, THE CONTAMINANTS ARE READILY DISTINGUISHED FROM EACH OTHER. (AUTHOR)

(U)

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AD- 625 447 8/5 13/2
SCRIPPS INSTITUTION OF OCEANOGRAPHY UNIV OF CALIFORNIA LA
JOLLA

CONCENTRATIONS OF COMMON LEAD IN GREENLAND SNOWS,

(U)

65 5P MUROZUMI, M. ; CHOW, T. J. ;
PATTERSON, C. ;
CONTRACT: NONR-2216(23)
PROJ: NR-083-005

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AVAILABILITY: PUBLISHED IN SYMPOSIUM ON MARINE
CHEMISTRY, NARRAGANSETT MARINE LABORATORY,
GRADUATE SCHOOL OF OCEANOGRAPHY, RHODE ISLAND
UNIV. OCCASIONAL PUB. NO. 3-1965 P213-5. COPIES TO

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SUPPLEMENTARY NOTE:

DESCRIPTORS: (*LEAD(METAL), AIR POLLUTION), (*AIR
POLLUTION, LEAD(METAL)), GREENLAND, COMBUSTION PRODUCTS,
HYDROCARBONS, EXHAUST GASES, AEROSOLS, SNOW,
GEOCHEMISTRY (U)

REPRINT: CONCENTRATIONS OF COMMON LEAD IN GREENLAND
SNOWS.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 627 927 4/1 16/1
PACIFIC MISSILE RANGE POINT MUGU CALIF

DIFFUSION OF CONTAMINATION FROM A SOURCE OF FINITE
EXTENT. (U)

DESCRIPTIVE NOTE: TECHNICAL MEMO.,
FEB 66 34P LUDLOFF, H. F. ;
REPT. NO. PMR-TM-65-4

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*DIFFUSION, AIR POLLUTION), (*GUIDED, AIR
POLLUTION), (*AIR POLLUTION, GUIDED MISSILE RANGES),
EXHAUST GASES, TOXICITY, ATMOSPHERES, TRANSPORT
PROPERTIES, MICROMETEOROLOGY, MATHEMATICAL ANALYSIS (U)

DIFFUSION OF CONTAMINATION FROM A SOURCE OF FINITE EXTENT.

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AD- 630 205 14/2 13/2 21/8.2
GCA TECHNOLOGY DIV GCA CORP BEDFORD MASS

ATMOSPHERIC TRANSPORT OF ROCKET MOTOR COMBUSTION BY-
PRODUCTS. VOLUME I. DATA ANALYSIS AND PREDICTION
TECHNIQUE. (U)

DESCRIPTIVE NOTE: FINAL REPT.,

DEC 65 159P CRAMER, H. E. ; HAMILTON, H. L.
JR. ; DESANTO, G. M. ;
CONTRACT: N123(61756)34567 (PMR),

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*TEST FACILITIES, SOLID PROPELLANT ROCKET
ENGINES), (*AIR POLLUTION, TEST FACILITIES), SITE
SELECTION, TOXICITY, TRACER STUDIES, CALIFORNIA,
BERYLLIUM COMPOUNDS, OXIDES, ZINC COMPOUNDS, DIFFUSION,
CADMIUM COMPOUNDS, SULFIDES, MICROMETEOROLOGY, CAPTIVE
TESTS (U)

IDENTIFIERS: CADMIUM ZINC SULFIDE (U)

THE DEVELOPMENT OF A DIFFUSION MODEL AND TECHNIQUES
FOR PREDICTING ATMOSPHERIC CONTAMINANT CONCENTRATIONS
AND DOSAGES AT LONG DISTANCES DOWNWIND FROM A SHORT-
DURATION SOURCE ON SAN NICOLAS ISLAND,
CALIFORNIA ARE DESCRIBED. THIS DEVELOPMENT WAS
REQUIRED TO ASSIST IN THE DETERMINATION OF THE
SUITABILITY OF SAN NICOLAS ISLAND AS A SITE FOR
STATIC TESTING OF TOXIC FUEL. THE MODEL IS BASED
ON MEASUREMENTS MADE DURING A FIELD PROGRAM USING A
NONTOXIC TRACER (ZINC CADMIUM SULFIDE), ON THE
RESULTS OF EARLIER FIELD PROGRAMS, AND ON THEORETICAL
WORK. THE SUBSIDENCE INVERSION LAYER OF THE SUB-
TROPICAL HIGH PRESSURE CELL NORMALLY OVERLYING THIS
AREA AND THE DISTURBED WIND FLOW REGIME IN THE LEE OF
THE ISLAND INTRODUCED UNIQUE FEATURES TO THIS
DIFFUSION PROBLEM. VOLUME I CONTAINS THE
THEORETICAL BACKGROUND, DATA ANALYSIS, AND A
DESCRIPTION OF THE DEVELOPMENT OF AN OPERATIONAL
MODEL FOR DIFFUSION PREDICTION. THE PROBLEM OF
CLOUD DEPLETION THROUGH GRAVITATIONAL SETTLING AND
OTHER PHENOMENA ARE DISCUSSED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 631 181 13/2 16/1 4/2
PACIFIC MISSILE RANGE POINT MUGU CALIF

THREE-DIMENSIONAL, ANALYTIC SOLUTIONS TO THE PROBLEMS
OF DIFFUSION OF WIND-DRIVEN CONTAMINATION. (U)

DESCRIPTIVE NOTE: TECHNICAL MEMO.,
APR 66 26P LUDLOFF, H. F. ;
REPT. NO. PMR-TM-66-4,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON STUDY OF DIFFUSION OF
CONTAMINATION FROM A SOURCE OF FINITE EXTENT, CONT.
OF PMR-TM-65-4.

DESCRIPTORS: (*AIR POLLUTION, DIFFUSION, (*WIND, AIR),
(*GUIDED MISSILE RANGES, AIR POLLUTION, DUST, AEROSOLS,
WASTE GASES, EQUATIONS, CONTAMINATION, GUIDED MISSILE
SAFETY, SOURCES, STATISTICAL (U)

ESTIMATES OF CRITICAL DISTANCES, UP TO WHICH DUST,
AEROSOLS, AND (TOXIC) FUMES MAY BE DRIVEN, UNDER
THE INFLUENCE OF VARIOUS WIND AND DIFFUSIVITY
CONDITIONS, REQUIRE THAT THREE-DIMENSIONAL SOLUTIONS
TO THE PROBLEM OF WIND-DRIVEN CONTAMINATION BE
DERIVED, FOR APPLICATION TO RANGE SAFETY PROBLEMS.
THE FOLLOWING WORK WAS DIRECTED TO THIS END:
(1) ANALYTIC SOLUTIONS FOR CONSTANT WIND AND
CONSTANT DIFFUSIVITY WERE DERIVED; (2) THREE -
DIMENSIONAL ANALYTIC SOLUTIONS WERE DERIVED, UNDER
THE ASSUMPTION THAT WIND SPEED AND EDDY DIFFUSIVITY
VARY, EITHER IN ACCORDANCE WITH THE CONJUGATE POWER
LAWS, OR IN A MORE GENERAL FASHION; (3) A NEW
METHOD OF SOLUTION IS SUGGESTED WHICH MAY BE USED FOR
SOLVING DIFFUSION PROBLEMS OF A MORE GENERAL NATURE;
(4) FIVE PARTICULAR, THREE-DIMENSIONAL PARABOLIC
SOURCE SOLUTIONS WERE DERIVED. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 640 444 21/2 13/2 21/4
CALIFORNIA UNIV BERKELEY THERMAL SYSTEMS DIV

OXIDES OF NITROGEN IN ENGINE EXHAUST WITH AMMONIA
FUEL.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,

JUN 66 27P SUTTON, R. ; STARKMAN, E. S. ;

REPT. NO. TR-7, TS-66-4

CONTRACT: DA-04-200-AMC-791(X),

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON AMMONIA FUEL.

DESCRIPTORS: (*EXHAUST GASES, NITROGEN COMPOUNDS),
(*NITROGEN COMPOUNDS, OXIDES), (*AMMONIA, COMBUSTION),
FUELS, COMBUSTION PRODUCTS, DECOMPOSITION, REACTION
KINETICS, SAMPLERS, SPECTROPHOTOMETERS, AIR POLLUTION(U)

AT MAXIMUM OUTPUT, MORE OXIDES OF NITROGEN ARE
PRODUCED BY COMBUSTION OF AMMONIA THAN WITH
HYDROCARBON FUELS. THIS IS PARTLY A RESULT OF PEAK
POWER OCCURRING AT LOW MIXTURES WITH AMMONIA.
DISPROPORTIONATE QUANTITIES OF NITROGEN OXIDES
WHICH ARE ENCOUNTERED WITH AMMONIA AT LEAN MIXTURE
RATIOS INDICATE A PROBABLE RESULT OF THE DIRECT
PRODUCTION OF NO IN THE AMMONIA PYROLYSIS SCHEME.
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 646 587 6/21 1/2
ARMY AEROMEDICAL RESEARCH UNIT FORT RUCKER ALA

APPROACH TO THE EVALUATION OF TOXIC HAZARDS FROM
WEAPONS EXHAUST IN ARMED HELICOPTERS, (U)

NOV 66 21P HODY, G. L. ;
REPT. NO. USAARU-67-5
PROJ: DA-3AN-2560-1A-819
TASK: 051

UNCLASSIFIED REPORT

DESCRIPTORS: (*WEAPON SYSTEMS, EXHAUST GASES), (*EXHAUST
GASES, TOXICITY), HAZARDS, HELICOPTERS, POISONOUS GASES,
CARBON MONOXIDE, PERFORMANCE(HUMAN), CONFINED
ENVIRONMENTS, CONTAMINATION (U)

THE COMPLEXITY OF FLYING AND THE ENVIRONMENTAL
STRESSES ENCOUNTERED BY PILOTS OF ARMED HELICOPTERS
ARE CONTINUING CHALLENGES. UNDER SUCH DIFFICULT
CONDITIONS ANY INTERFERENCE WITH MENTAL OR SENSORY
CAPABILITIES OF THE PILOTS CAN BE REFLECTED IN AN
INCREASED CASUALTY RATE. HELICOPTER MOUNTED
WEAPONS RELEASE A TOXIC EXHAUST WHICH COULD DISTURB
VISION AND HEARING AND MIGHT ADVERSELY AFFECT
REACTION TIME AND THE REASONING PROCESS. A BRIEF
EXPLORATORY STUDY CONFIRMED THE IMPRESSION THAT THE
WEAPONS EXHAUST CAN REACH THE CREW IN MEASURABLE
CONCENTRATIONS. AN OBJECTIVE ASSESSMENT OF THE
HAZARD IS OBVIOUSLY NEEDED BEFORE COSTLY OR
INCONVENIENT CORRECTIVE MEASURES NEED BE CONSIDERED.
A CAREFUL SEARCH FAILED TO REVEAL EXISTING METHODS
FOR THE REQUIRED EVALUATION WHICH INVOLVES CONTINUOUS
MEASUREMENT OF RAPIDLY CHANGING CONTAMINANT
CONCENTRATIONS IN A CONFINED AND VIBRATING
ENVIRONMENT. AN EXPERIMENTAL PROGRAM DESIGNED TO
EXPLORE A TECHNIQUE FOR MEETING THE OPERATIONAL
REQUIREMENT IS BEING IMPLEMENTED IN COOPERATION WITH
THE AIR FORCE ROCKET PROPULSION LABORATORY.
WHILE THE POTENTIAL FOR A HAZARDOUS SITUATION IS
VERY REAL IN ALL ARMED AIRCRAFT, THE CONCERN IS WITH
THE NEW, EXPERIMENTAL HELICOPTERS, EQUIPPED WITH
MULTIPLE RAPID FIRE WEAPONS SYSTEMS, IN ADDITION TO
THOSE ARMED HELICOPTERS NOW DEPLOYED IN THE FIELD.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 658 570 13/12 19/3
ARMY MEDICAL RESEARCH LAB FORT KNOX KY

TEST OF CARBON MONOXIDE HAZARD FROM ENGINE IN LIGHT
TANK, M24, (U)

APR 45 6P WALPOLE, ROBERT H. ;
PROJ: T-7

UNCLASSIFIED REPORT

DESCRIPTORS: (*EXHAUST GASES, *HAZARDS), (*TANKS(COMBAT
VEHICLES), TANK ENGINES), CARBON MONOXIDE, SAFETY,
POISONING, DESIGN, EXHAUST PIPES, VENTILATION, WIND (U)

THE PURPOSE OF THE REPORT IS TO INVESTIGATE THE
CARBON MONOXIDE HAZARD IN THE FIGHTING COMPARTMENT OF
SUBJECT VEHICLE FROM CONTAMINATION BY EXHAUST FUMES.
HAZARDOUS CARBON MONOXIDE CONCENTRATIONS ARE FOUND
WITHIN THE FIGHTING COMPARTMENT FROM EXHAUST GASES
ENTERING THE ENGINE AIR INTAKE WHEN THE VEHICLE IS
STATIONARY WITH ENGINE IDLING AND WIND IS FROM THE
REAR. DANGER OF CREW COMPARTMENT CONTAMINATION
FROM THIS SOURCE IS LARGELY ELIMINATED THROUGH
CHANGES IN DIRECTION OF DISCHARGE OF ENGINE EXHAUST
GASES TO PREVENT SHORT-CIRCUITING TO THE AIR INTAKE.
RECOMMENDATIONS ARE TO REDESIGN EXHAUST TAIL PIPE
TO ELIMINATE CONTAMINATION OF AIR ENTERING FIGHTING
COMPARTMENT BY ENGINE EXHAUST FUMES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 658 637 13/12 19/3
ARMY MEDICAL RESEARCH LAB FORT KNOX KY

CARBON MONOXIDE HAZARD FROM AUXILIARY GENERATORS IN
TANKS, (U)

APR 43 5P NELSON, NORTON ; SWIGERT, T.
C. ;
PROJ: 3-12

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJ. 'DETERMINATION OF THE
CARBON MONOXIDE HAZARD FROM AUXILIARY GENERATORS
IN TANKS.'

DESCRIPTORS: (*TANKS (COMBAT VEHICLES), HAZARDS),
(*GENERATORS, *CARBON MONOXIDE), SAFETY, EXHAUST GASES,
PROTECTION, EXHAUST PIPES, TOXIC TOLERANCES,
LEAKAGE (FLUID), WIND (U)

THE PURPOSE OF THE REPORT IS TO DETERMINE THE
MAGNITUDE OF THE CARBON MONOXIDE HAZARD RESULTING
FROM OPERATION OF AUXILIARY GENERATORS IN TANKS WHEN
THE TANK MOTOR IS NOT RUNNING. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 662 123 6/20 21/9 6/5
NAVAL MEDICAL RESEARCH INST BETHESDA MD

TOXICOLOGICAL ASPECTS OF MISSILES AND NUCLEAR
SUBMARINE WARFARE, (U)

64 7P BALDRIDGE, H. DAVID, JR;
PROJ: NAVMED-MR005.14-4001.06
TASK: MR005.14-5001.06-1

UNCLASSIFIED REPORT

AVAILABILITY: PUBLISHED IN MILITARY MEDICINE V130
N5 P505-11 1965.

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT THE
ANNUAL MEETING OF THE ASSOCIATION OF MILITARY
SURGEONS OF THE U.S. (71ST) WASHINGTON, D.
C., 20-22 OCT 64.

DESCRIPTORS: (*ROCKET PROPELLANTS, TOXICITY), OXIDIZERS,
WEAPON SYSTEMS, BALLISTIC MISSILE SUBMARINES, CONFINED
ENVIRONMENTS, EXHAUST GASES, HYDRAZINE, NUCLEAR POWERED
SHIPS, CLOSED ECOLOGICAL SYSTEMS, HAZARDS, AIR
POLLUTION, MILITARY MEDICINE (U)

ONE OF THE CHARACTERISTICS OF NEW FORMS OF WARFARE
IS THE ENCAPSULATION OF MEN AND MACHINES UNDER
CONDITIONS OF TOXICOLOGICAL SIGNIFICANCE. MILITARY
CHEMISTS AND TOXICOLOGISTS HAVE BECOME MEMBERS OF
WEAPON RESEARCH AND DEVELOPMENT TEAMS IN AN EFFORT TO
INSURE THAT HAZARDOUS CHEMICALS WILL BE CONTROLLED IN
THE DEPLOYMENT OF SUCH WEAPONS TO THE LIMIT PERMITTED
BY OPERATIONAL REQUIREMENTS. IN ROCKET OPERATIONS
WHERE LAWS OF GAS DYNAMICS REQUIRE THE USE OF LARGE
QUANTITIES OF TYPES OF CHEMICAL COMPOUNDS WHICH ARE
INHERENTLY HAZARDOUS TO MAN, THE ROLE OF THE CHEMIST
AND TOXICOLOGIST IS PRIMARILY ONE OF CREW PROTECTION
AGAINST AN ACUTE HAZARD POTENTIAL. WITH CLOSED
ATMOSPHERES SUCH AS THOSE ABOARD SUBMARINES AND OTHER
ENCAPSULATED WEAPONS SYSTEMS WHERE EMPHASIS IS ON
POSSIBLE CHRONIC INHALATION TOXICITY, GREATER
CONSIDERATION IS GIVEN TO ACTUAL SELECTION OF
CHEMICAL MATERIALS BY DESIGN ENGINEERS AND TO THE
CONDITIONS OF USAGE. OUT OF SUCH EXPERIENCES IN
THE DEVELOPMENT AND OPERATIONAL DEPLOYMENT OF WEAPONS
AND FROM LABORATORY STUDIES WHICH ATTEMPT TO DEFINE
THE LIMIT OF MAN'S ABILITY TO ENDURE CHEMICAL
MANIPULATION OF HIS NATURAL ENVIRONMENT, THERE WILL
CONTINUE TO BE LAID DOWN A FIRM FOUNDATION UPON WHICH
DESIGN PARAMETERS FOR FUTURE WEAPONS AND CLOSED
ECOLOGICAL SYSTEMS WILL BE BASED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 665 105 13/2 13/6
RAND CORP SANTA MONICA CALIF

APPROACHES TO DEALING WITH MOTOR VEHICLE AIR
POLLUTION: REPORT OF THE SUBPANEL TRANSPORTATION
SYSTEM REQUIREMENTS OF THE PANEL ON ELECTRICALLY
POWERED VEHICLES, (U)

DFC 67 57P BLUM, EDWARD H. ;
REPT. NO. P-3776

UNCLASSIFIED REPORT

DESCRIPTORS: (*PASSENGER VEHICLES, *AIR POLLUTION),
(*ELECTRIC MOTORS, PASSENGER VEHICLES), TRANSPORTATION,
URBAN AREAS, ECONOMICS, PUBLIC OPINION, EFFECTIVENESS,
COSTS, INTERACTIONS, CONTAMINATION, FEASIBILITY
STUDIES (U)
IDENTIFIERS: RAPID TRANSIT (U)

THE PURPOSE OF THE REPORT IS TO DEVELOP A STYLE OR
REASON FOR VEHICULAR POLLUTION POLICY. THE REPORT
TREATS ASPECTS OF VEHICULAR POLLUTION NOT DIRECTLY
CONCERNED WITH SPECIFIC TECHNOLOGY--AND CONSTRUCTS A
SYSTEMATIC FRAMEWORK WITHIN WHICH THE VEHICULAR
POLLUTION PROBLEM CAN BE SEEN AND ANALYZED AS A
WHOLE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 667 557 21/5 1/3 13/2
AEROSPACE RESEARCH LABS WRIGHT-PATTERSON AFB OHIO

MICROSCOPIC PARTICLE SEPARATION AND APPLICATIONS,

(U)

FFB 68 80P POPLAWSKI, ROBERT ; MILLER,
ROGER A. ;
REPT. NO. ARL-68-0024
PROJ: AF-7116
TASK: 711600

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT THE
MEETING ON HELICOPTER PROPULSION SYSTEMS, SPONSORED BY
THE AGARD PROPULSION AND ENERGETICS PANEL, OTTAWA,
CANADA, 10-4 JUN 68.

DESCRIPTORS: (*GAS TURBINES, INGESTION(ENGINES)),
(*AIRCRAFT ENGINES, *INGESTION(ENGINES)), (*AIR
POLLUTION, SEPARATION), DUST, PARTICLES, ENGINE AIR
SYSTEMS COMPONENTS, SEA WATER, ENVIRONMENTAL TESTS,
DESIGN, TEST METHODS, SALT SPRAY TESTS, TRANSPORT
AIRCRAFT, HELICOPTERS, VERTICAL TAKEOFF AIRCRAFT,
AVIATION SAFETY

(U)

IDENTIFIERS: *PARTICLE SEPARATION, SEPARATORS,
TRADEOFFS

(U)

THE APPLICATION OF ULTRA-MICROSCOPIC PARTICLE
SEPARATION STUDIES RANGES FROM THE PROTECTION OF
TURBINE ENGINES FROM DUST AND/OR SEA SPRAY TO
APPLICATIONS IN THE FIELD OF AIR POLLUTION. THE
PAPER PRESENTS NOT ONLY THE THEORY OF THESE DEVICES
AND LABORATORY EXPERIMENTAL RESULTS, BUT ALSO FIELD
TESTING RESULTS ON SELECTED UNITS. THE IMPORTANT
TRADE-OFFS BETWEEN DESIGN PARAMETERS AND THE
SELECTION PROCESSES REQUIRED TO TAILOR A DUST
SEPARATOR TO A SPECIFIC APPLICATION ARE DISCUSSED AND
OTHER IMPORTANT AREAS OF APPLICATION ARE SUGGESTED.
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 668 053 13/2 4/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

QUESTIONS OF ATMOSPHERIC DIFFUSION AND AIR POLLUTION:
SELECTED ARTICLES. (U)

SEP 67 40P
REPT. NO. FTD-MT-24-186-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF GLAVNAYA
GEOFIZICHESKAYA OBSERVATORIYA, LENINGRAD. TRUDY
(USSR) N172 P23-34, 42-7, 74-8 1965.

DESCRIPTORS: (*AIR POLLUTION, METEOROLOGICAL PHENOMENA),
(*ATMOSPHERIC MOTION, AIR POLLUTION), POWER
PLANTS(ESTABLISHMENTS), WASTE GASES, SULFUR COMPOUNDS,
DIOXIDES, INORGANIC ACIDS, WIND, DIFFUSION, USSR (U)
IDENTIFIERS: SULFUROUS ACID, TRANSLATIONS (U)

CONTENTS: RESULTS OF ANALYSIS OF EXPERIMENTAL
DATA CHARACTERIZING THE DISTRIBUTION OF ATMOSPHERIC
POLLUTIONS NEAR THE THERMAL ELECTRIC POWER STATIONS;
ANALYSIS OF DISPERSION OF HORIZONTAL OSCILLATIONS
OF THE WIND DIRECTION; THE QUESTION OF HORIZONTAL
SCATTERING OF IMPURITY IN THE ATMOSPHERE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 672 356 6/3 8/6
STANFORD RESEARCH INST MENLO PARK CALIF

CONCENTRATIONS OF CARBON MONOXIDE AND ORGANIC GASES
IN ARCTIC ATMOSPHERES. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 MAY 67-30 APR 68,
APR 68 29P CAVANAGH, LEONARD A. ;
CONTRACT: N00014-67-C-0515
PROJ: NR-307-313, SRI-PRU-6689

UNCLASSIFIED REPORT

DESCRIPTORS: (*ARCTIC REGIONS, *AEROBIOLOGY),
ATMOSPHERIC MOTION, AIR POLLUTION, CARBON MONOXIDE,
ORGANIC COMPOUNDS, GAS ANALYSIS, METEOROLOGICAL
PHENOMENA (U)

INVESTIGATIONS HAVE BEEN CONDUCTED ON THE
CONCENTRATIONS OF CARBON MONOXIDE AND HYDROCARBONS OF
LOW MOLECULAR WEIGHT IN 'CLEAN' ARCTIC AIR, AND
THEIR PATTERNS AS FUNCTIONS OF METEOROLOGICAL
PARAMETERS HAVE BEEN INTERPRETED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 674 644 1/3 1/2
DYNASCIENCES CORP BLUE BELL PA

INVESTIGATION OF THE DOWNWASH ENVIRONMENT GENERATED
BY V/STOL AIRCRAFT OPERATING IN GROUND EFFECT. (U)

DESCRIPTIVE NOTE: FINAL REPT.,

JUL 68 149P GEORGE, M. ; KISIELOWSKI, E. ;
DOUGLAS, D. S. ;

REPT. NO. DCR-275

CONTRACT: DA-44-177-AMC-316(T)

PROJ: DA-1-T-021701-A-047

MONITOR: USAAVLABS TR-68-52

UNCLASSIFIED REPORT

DESCRIPTORS: (*HELICOPTERS, DOWNWASH), (*VERTICAL
TAKEOFF AIRCRAFT, DOWNWASH), (*AIR POLLUTION, HOVERING),
GROUND EFFECT, DUST, MATHEMATICAL MODELS, TRANSPORT
AIRCRAFT, RESEARCH PLANES, VISIBILITY, MASS TRANSFER,
FLOW FIELDS (U)

IDENTIFIERS: C-142 AIRCRAFT, H-21 AIRCRAFT, V-5
AIRCRAFT, XC-142 AIRCRAFT, X-19 AIRCRAFT, X-22A
AIRCRAFT, X-22 AIRCRAFT, XV-5A AIRCRAFT (U)

ANALYTICAL METHODS ARE DEVELOPED FOR DETERMINING
THE DOWNWASH ENVIRONMENT GENERATED BY MULTI-ROTOR/
PROPELLER V/STOL AIRCRAFT CONFIGURATIONS
OPERATING IN GROUND PROXIMITY. THESE METHODS ARE
UTILIZED TO COMPUTE ROTOR FLOW FIELD AND CONTAMINANT
DUST CLOUD CHARACTERISTICS (INCLUDING PARTICLE
DENSITY AND SIZE DISTRIBUTIONS) FOR THE H-21,
XC-142, X-22A, X-19A, AND XV-5A
AIRCRAFT. THE EFFECTS OF THE CONTAMINATED
ATMOSPHERE ON PILOT'S VISIBILITY, GROUND EQUIPMENT,
AND PERSONNEL ARE ALSO DETERMINED FOR THESE AIRCRAFT.
THE THEORETICALLY PREDICTED RESULTS ARE GENERALLY
IN GOOD AGREEMENT WITH THE LIMITED TEST DATA.
ADDITIONAL FULL-SCALE TEST DATA ARE REQUIRED TO
VERIFY FURTHER THE ASSUMPTIONS INHERENT IN THE
THEORY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 680 747 13/2
RAND CORP SANTA MONICA CALIF

INCREASE OF EXCHANGEABLE CARBON IN THE EARTH'S
RESERVOIRS FROM COMBUSTION OF FOSSIL FUELS, (U)

DEC 68 25P DUGAS, DORIS J. ;
REPT. NO. P-3990

UNCLASSIFIED REPORT

DESCRIPTORS: (*CARBON DIOXIDE, ATMOSPHERES), (*AIR
POLLUTION, CARBON DIOXIDE), MATHEMATICAL MODELS,
HYDROCARBONS, FUELS, OCEANS, SURFACE PROPERTIES,
DEPOSITS, SOILS, GEOLOGIC AGE DETERMINATION, RADIOACTIVE
ISOTOPES, CARBON, PERIODIC VARIATIONS, ATMOSPHERIC
TEMPERATURE, INDUSTRIES, SOURCES, ABSORPTION (U)
IDENTIFIERS: FOSSIL FUELS (U)

THE DISTRIBUTION OF EXCESS CARBON DIOXIDE PRODUCED
DURING AND AFTER THE CONSUMPTION OF ALL FOSSIL FUEL
IS DETERMINED WITH THE AID OF A FOUR-RESERVOIR MODEL
OF CARBON EXCHANGE AS DEVELOPED PREVIOUSLY FOR
CARBON-14. FROM ESTIMATES OF THE TOTAL HYDROCARBON
FUEL RESOURCES ORIGINALLY ON EARTH, IT IS CALCULATED
THAT ABOUT 3000 BILLION TONS OF CARBON ULTIMATELY MAY
BE RELEASED TO THE ATMOSPHERE FROM THIS SOURCE.
CARBON EXCESS IN THE SURFACE LAYERS OF THE OCEAN
REACHES A PEAK A FEW YEARS LATER THAN THE ATMOSPHERE
AND RETAINS SOMEWHAT LESS OF THE EXCESS CARBON AT
EQUILIBRIUM, WHILE THE DEEP SEA EVENTUALLY ABSORBS
OVER 90 PERCENT OF THE EXCESS CARBON RELEASED BY
FOSSIL FUEL CONSUMPTION. IT WAS FOUND THAT THE
RESULTS ARE HIGHLY SENSITIVE TO THE ASSUMPTIONS AS TO
FUTURE FOSSIL FUEL CONSUMPTION RATES, BUT THAT THE
ATMOSPHERIC CARBON CONCENTRATION IS NOT CRITICALLY
AFFECTED BY THE AMOUNT OF DIRECT EXCHANGE BETWEEN THE
ATMOSPHERE AND DEEP SEA. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 686 459 6/20 21/9.1 13/2
OREGON STATE UNIV CORVALLIS RADIATION CENTER

STUDIES ON ENVIRONMENTAL POLLUTION BY MISSILE
PROPELLANTS. (U)

DESCRIPTIVE NOTE: FINAL REPT. MAY 64-JUN 67,
FEB 69 37P DOST, FRANK N. ; REED, D.

J. ; WANG, C. H. ;

CONTRACT: AF 33(615)-1767

PROJ: AF-6302

TASK: 630204

MONITOR: AMRL TR-68-85

UNCLASSIFIED REPORT

DESCRIPTORS: (*LIQUID ROCKET PROPELLANTS, *TOXICITY),
(*HALOGEN COMPOUNDS, TOXICITY), (*NITROGEN COMPOUNDS,
TOXICITY), PLANTS(BOTANY), FISHES, BACTERIA, AIR
POLLUTION, LIQUID ROCKET OXIDIZERS, HYDRAZINE
DERIVATIVES, BROMINE COMPOUNDS, FLUORIDES, CHLORINE
COMPOUNDS, MICROORGANISMS (U)
IDENTIFIERS: BROMINE PENTAFLUORIDE, CHLORINE
PENTAFLUORIDE, CHLORINE TRIFLUORIDE, *ENVIRONMENTS,
*POLLUTION, *FLUORINE INORGANIC COMPOUNDS, FLUORINE
OXIDE, HYDRAZINE TETRAFLUORIDE, HALOGEN COMPOUNDS,
FLUORIDES, NITROGEN COMPOUNDS (U)

THE EFFECTS OF SINGLE EXPERIMENTAL EXPOSURES OF
PLANTS, FISH AND MICROORGANISMS TO MEMBERS OF A GROUP
OF INORGANIC FLUORIDE OXIDIZING AGENTS HAVE BEEN
SUMMARIZED. THE INFORMATION OBTAINED HAS ENABLED
ESTIMATION OF THE DAMAGE TO BE EXPECTED AS A RESULT
OF SINGLE ACCIDENTAL EXPOSURES IN THE FIELD. THESE
AGENTS--NITROGEN TRIFLUORIDE (NF3),
TETRAFLUOROHYDRAZINE (N2F4), OXYGEN DIFLUORIDE
(OF2), CHLORINE TRIFLUORIDE (CLF3), BROMINE
PENTAFLUORIDE (BRF5), AND CHLORINE
PENTAFLUORIDE (CLF5)--VARY IN CHEMICAL BEHAVIOR
AND BIOLOGICAL EFFECTS. NF3 IS RELATIVELY
INNOCUOUS; OF2 MUST BE AVOIDED ABSOLUTELY BY
ANIMALS AND PLANTS, AND BOTH ARE QUITE STABLE
CHEMICALLY. THE INTERHALOGENS REACT READILY IN
CONTACT WITH ENVIRONMENTAL CONSTITUENTS, AND WHILE
DESTRUCTIVE AT THE SITE OF INITIAL CONTACT, THEY ARE
SELF LIMITING IN EFFECT. N2F4 ALSO REACTS
EASILY, BUT SHOULD CAUSE ONLY MODERATE DAMAGE.
PLANT INJURY IN ALL CASES WOULD PROBABLY BE LIMITED
TO THE CURRENTLY GROWING CROP, WITH LITTLE
POSSIBILITY OF CARRY-OVER EFFECTS IN SOIL.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 689 079 13/2
WARREN SPRING LAB STEVENAGE (ENGLAND)

AIR POLLUTION ABSTRACTS A1256A-A12656. (U)

FEB 69 31P

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, *ABSTRACTS), HYDROCARBONS, AEROSOLS, CONTAMINATION, WASTE GASES, DIFFUSION, GAS CHROMATOGRAPHY, INSTRUMENTATION, SULFOXIDES, PARTICLES, TRACER STUDIES, CHEMICAL PROPERTIES, GREAT BRITAIN (U)

THE REPORT CONTAINS ABSTRACTS ON AIR POLLUTION EFFECTS; IDENTIFICATION; MEASUREMENT; METHODS AND EQUIPMENT FOR ABATEMENT, ETC.; PREPARED BY THE MINISTRY OF TECHNOLOGY, STEVENAGE, ENGLAND. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 698 913 7/5 13/2
CALIFORNIA UNIV RIVERSIDE DEPT OF CHEMISTRY

SINGLET OXYGEN IN THE ENVIRONMENTAL SCIENCES SINGLET
MOLECULAR OXYGEN AND PHOTOCHEMICAL AIR POLLUTION,

(U)

NOV 68 11P PITTS, J. N. , JR.; KHAN,
AHSAN U. ; SMITH, BRIAN ; WAYNE, RICHARD P. ;
CONTRACT: DA-AR0(D)-31-124-G804
PROJ: DA-2-0-061102-B-11-B
MONITOR: AR0D 6223:16-P

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN ENVIRONMENTAL SCIENCE AND
TECHNOLOGY, V3 N3 P241-247 MAR 69.

SUPPLEMENTARY NOTE: REVISION OF REPORT DATED 20 JUL
67.

DESCRIPTORS: (*AIR POLLUTION, *PHOTOCHEMICAL REACTIONS),
(*OXYGEN, AIR POLLUTION), REVIEWS, ALKENES, NITROGEN
OXIDES, URBAN AREAS, OZONE, PHOTOLYSIS, EXHAUST GASES,
MOLECULAR ENERGY LEVELS (U)

IDENTIFIERS: AUTOMOBILE EXHAUST, CHEMICAL REACTION
MECHANISMS, NITROGEN OXIDE(NO2), NITROGEN OXIDE(NO),
PHOTOCHEMICAL REACTIONS, SINGLET ENERGY LEVELS (U)

SINGLET MOLECULAR OXYGEN (SINGLET O2) MAY
PLAY A SIGNIFICANT ROLE AS AN OXIDANT IN
PHOTOCHEMICAL AIR POLLUTION. REACTION OF
ELECTRONICALLY EXCITED OXYGEN WITH OLEFINIC
SUBSTANCES PRODUCES THERMALLY UNSTABLE HYDROPEROXIDES
WHICH MAY BE INVOLVED IN THE RAPID CONVERSION OF NO
INTO NO2, A PROCESS NOT WELL UNDERSTOOD IN
PHOTOCHEMICAL AIR POLLUTION. SEVERAL MECHANISMS
FOR THE FORMATION OF SINGLET O2 ARE EXAMINED
CRITICALLY IN RELATION TO THEIR POSSIBLE IMPORTANCE
IN THE CHEMISTRY OF URBAN ATMOSPHERES. IN EACH,
THE EXCITATION ENERGY IS DERIVED ULTIMATELY FROM THE
SUN'S RADIATION, BUT THE ENERGY MAY BE UTILIZED BY
DIRECT ABSORPTION OF RADIATION BY GROUND STATE
TRIPLET O2 BY PHOTOLYSIS OF AN ATMOSPHERIC
CONTAMINANT TO FORM EXCITED SINGLET O2 IN THE
PRIMARY STEP, BY SPIN-CONSERVED ENERGY TRANSFER
MECHANISM IN WHICH AN ATMOSPHERIC CONTAMINANT ABSORBS
SOLAR RADIATION AND TRANSFERS ITS EXCITATION TO
GROUND STATE TRIPLET O2, OR BY EXOTHERMIC CHEMICAL
REACTIONS INVOLVING ATMOSPHERIC CONTAMINANTS WHICH
THEMSELVES ORIGINATED IN A PHOTOCHEMICAL PROCESS.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 699 297 13/6 21/2 13/2
EIDGENOESSISCHE TECHNISCHE HOCHSCHULE ZURICH (SWITZERLAND)
INSTITUT FÜR HYGIENE UND ARBEITSPHYSIOLOGIE

(CALIFORNIA-TEST). BEKAEMPFUNG DER
LUFTVERUNREINIGUNG DURCH KONTROLLMASSNAHMEN AN NEUEN
MOTORFAHRZEUGTYPEN IN DEN VEREINIGTEN STAATEN VON
AMERIKA (CALIFORNIA TEST. COMBATING AIR
POLLUTION BY MEANS OF DEVICES ON NEW MOTOR
VEHICLE TYPES IN THE U. S.), (U)

66 8P MUELLER, VON THOMAS TH. ;

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN NEUE ZUERCHER ZEITUNG,
BLATT 4 N5168 8P, 29 NOV 66. NO COPIES FURNISHED.
SUPPLEMENTARY NOTE: TEXT IN GERMAN.

DESCRIPTORS: (*PASSENGER VEHICLES, COMBUSTION PRODUCTS),
(*AIR POLLUTION, CONTROL SYSTEMS), HYDROCARBONS, SPARK
IGNITION ENGINES, TEST METHODS, TEST EQUIPMENT,
MODIFICATION KITS, DESIGN, AUTOMATIC, UNITED STATES,
SWITZERLAND (U)
IDENTIFIERS: CONTROL (U)

AN ACCOUNT IS GIVEN OF AUTOMOTIVE RESEARCH AIMED AT
THE REDUCTION OF AIR POLLUTION FROM EXHAUST GASES BY
MEANS OF NEW ENGINE DESIGN AND CONTROL METHODS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 699 360 21/2

ARMY ENVIRONMENTAL HYGIENE AGENCY EDGEWOOD ARSENAL MD

ATMOSPHERIC SAMPLING STUDY OF NF ROCKET PROPELLANT,
REDSTONE ARSENAL, HUNTSVILLE, ALABAMA, 26
MAY-26 JUNE 1969. (U)

DESCRIPTIVE NOTE: AIR POLLUTION ENGINEERING STUDY,

69 38P WIENER, HOWARD A. ; BARTELL,

ROBERT P. ; HESS, THOMAS L. ; PORTS, KENNETH N.

REPT. NO. USAEHA-STUDY-99-003-69/70

UNCLASSIFIED REPORT

DESCRIPTORS: (*ROCKET PROPELLANTS, *EXHAUST GASES),
(*AIR POLLUTION, ROCKET PROPELLANTS), (*FLUORIDES,
EXHAUST GASES), CARBON MONOXIDE, ALUMINUM COMPOUNDS,
FLUOROAMINES (U)

IDENTIFIERS: ALUMINUM FLUORIDES, ALUMINUM CHLORIDES,
FLUORIDES, HYDROGEN, *ROCKET EXHAUST (U)

A FIELD STUDY WAS CONDUCTED TO MEASURE THE
CONCENTRATION OF AND DETERMINE AREAS OF EXPOSURE TO
TOTAL FLUORIDES IN THE EXHAUST CLOUD OF STATICALLY
FIRED SIX POUND MOTORS UTILIZING A DEVELOPMENTAL
ROHM AND HAAS NF PROPELLANT. RESULTS OF THE
STUDY GAVE STRONG INDICATIONS THAT ONLY AREAS EXPOSED
TO THE VISIBLE EXHAUST WOULD BE CONTAMINATED BY
FLUORIDES. THE STUDY RESULTS ALSO INDICATED THAT
ALL FLUORIDES IN THE EXHAUST WERE PREDOMINANTLY IN
THE GASEOUS STATE. AREAS OF GREATEST EXHAUST CLOUD
TOTAL FLUORIDE CONCENTRATION WERE FOUND TO BE AT THE
APPROXIMATE LOCATION WHERE THE CLOUD WAS INITIALLY
FORMED. IN THE FIRING TESTS CONDUCTED, EXPOSURE TO
THE CLOUD AT ANY POINT WITHIN ITS PATH WAS DETERMINED
TO BE LESS THAN ONE MINUTE IN ALL CASES OBSERVED.
IT WAS ESTIMATED THAT AREAS AT DISTANCES GREATER
THAN 150 METERS FROM THE FIRING POINT OF THE SIX-
POUND MOTORS WOULD NOT BE SIGNIFICANTLY EXPOSED TO
FLUORIDES FROM THE EXHAUST. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 701 067 21/5 21/4
LEASCO SYSTEMS AND RESEARCH CORP NEW YORK

FUEL ADDITIVE ATOMIZATION IN JET ENGINE
TAILPIPES. (U)

DESCRIPTIVE NOTE: FINAL REPT. AUG 68-NOV 69,
JAN 70 38P COLE, PHILLIP ; PARMET, IRWIN ;
REPT. NO: 51502
CONTRACT: F19628-68-C-0376
PROJ: AF-8679
TASK: 867902
MONITOR: AFCRL 70-0031

UNCLASSIFIED REPORT

DESCRIPTORS: (*TURBOJET ENGINES, *EXHAUST PIPES), (*JET
ENGINE FUELS, FUEL ADDITIVES), (*FUEL ADDITIVES,
*ATOMIZATION), LIQUID JETS, FUEL INJECTION, MATHEMATICAL
ANALYSIS, EXHAUST GASES, MATHEMATICAL MODELS, PARTICLE
SIZE (U)

THE REPORT INCLUDES A REVIEW OF THE TECHNICAL
LITERATURE RELATING TO THE MODELLING OF THE
ATOMIZATION PROCESS, AN ANALYSIS OF THE DIFFERENCES
BETWEEN CONDITIONS STUDIED IN THE REPORTS AND THOSE
FOUND IN JET EXHAUSTS, AND, FINALLY, RECOMMENDATIONS
FOR FOLLOW-UP STUDIES DESIGNED TO MODIFY EARLY MODELS
AS A CONSEQUENCE OF THOSE DIFFERENCES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 701 759 21/7 1/3
NATIONAL AVIATION FACILITIES EXPERIMENTAL CENTER ATLANTIC
CITY N J

ACCELERATED TESTING OF GENERAL AVIATION ENGINE
EXHAUST SYSTEMS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

FEB 70 42P SLUSHER, GERALD ;
REPT. NO. NA-70-23
PROJ: FAA-520-003-01X
MONITOR: FAA-DS 70-2

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIRCRAFT ENGINES, *EXHAUST SYSTEMS),
CAPTIVE TESTS, TEST METHODS, HEAT EXCHANGERS, EXHAUST
GASES, FAILURE (MECHANICS), DESIGN, CORROSION INHIBITION,
CHROMIUM ALLOYS, IRON ALLOYS, NICKEL ALLOYS,
VENTILATION, ENGINE MUFFLERS (U)

IDENTIFIERS: AIRCRAFT, LIGHTWEIGHT, *GENERAL AVIATION
AIRCRAFT (U)

AN ACCELERATED TEST PROCEDURE WAS DEVELOPED FOR POSSIBLE USE TO ENHANCE AND DEMONSTRATE THE AIRWORTHINESS OF EXHAUST SYSTEMS OF SINGLE-ENGINE AIRCRAFT INCORPORATING EXHAUST GAS-TO-AIR HEAT EXCHANGERS. THE EXHAUST SYSTEMS OF SEVEN AIRCRAFT WERE ENDURANCE TESTED ON ENGINE STANDS TO DETERMINE IF THE TYPES AND TIMES OF FAILURES OCCURRING DURING THE TESTS WERE SIMILAR TO FAILURES OCCURRING IN AIRCRAFT AND TO IDENTIFY DESIGN FEATURES FOR MINIMIZING HAZARDS. EVALUATION OF AN EXHAUST SYSTEM FABRICATED OF A MORE CORROSION-RESISTANT MATERIAL WAS INCLUDED. TESTING WAS CONDUCTED EITHER UNTIL FAILURE OCCURRED OR 600 TEST HOURS WERE ACCUMULATED. THE ACCELERATED TEST SCHEDULE AND PROCEDURE PRODUCED FAILURES COMPARABLE TO THOSE OCCURRING IN AIRCRAFT WITH 1 HOUR OF TESTING EQUIVALENT ON THE AVERAGE TO 3.8 HOURS OF OPERATION IN AIRCRAFT. IT WAS CONCLUDED THAT THE UTILIZATION OF MORE CORROSION-RESISTANT, NICKEL-IRON-CHROMIUM MATERIAL WOULD SIGNIFICANTLY REDUCE OR ELIMINATE THOSE EXHAUST SYSTEM FAILURES RESULTING FROM HIGH-TEMPERATURE OXIDATION OR CORROSION, AND THAT MUFFLER FAILURES AND RELATED CARBON MONOXIDE HAZARDS COULD BE MINIMIZED BY THE DESIGN AND CONSTRUCTION OF AIRTIGHT CABIN VENTILATING SYSTEMS IN CONJUNCTION WITH THE INCORPORATION OF MUFFLER DESIGNS OF THE AXIAL FLOW THROUGH TYPE FABRICATED OF A MORE CORROSION-RESISTANT MATERIAL. (AUTHOR)

UNCLASSIFIED

000M1

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 703 564 13/6
RAND CORP SANTA MONICA CALIF

THE AUTOMOBILE'S ROLE IN THE FUTURE,

(U)

MAR 70 8P HULT, JOHN L. ;
REPT. NO. P-4332

UNCLASSIFIED REPORT

DESCRIPTORS: (*TRANSPORTATION, *PASSENGER VEHICLES),
URBAN AREAS, COMMUNICATION SYSTEMS, ELECTRONICS, SHOCK
ABSORBERS, AIR POLLUTION (U)
IDENTIFIERS: RAPID TRANSIT SYSTEMS (U)

THE PAPER EXPLORES THE COMPETITION BETWEEN VARIOUS
MODES OF TRAVEL AS A FUNCTION OF RANGE AND BETWEEN
TRAVEL AND ELECTRONICS FOR COMMUNICATING. AN
EVOLUTIONARY DEVELOPMENT OF OUR MEANS OF TRAVEL IS
DESCRIBED WHICH WOULD INTRODUCE NEW CONCEPTS FOR
IMPROVING THE CAPACITY AND CAPABILITY OF OUR URBAN
TRANSPORTATION SYSTEMS WHILE MOLLIFYING UNWANTED SIDE
EFFECTS. A FREEWAY EXPRESS TRANSIT IS OUTLINED
WHICH WOULD BETTER USE THE ALREADY HUGE INVESTMENT
COMMITMENTS IN LAND, EQUIPMENT, AND SOCIAL WAY OF
LIFE THAT HAVE MADE THE AUTOMOBILE SUCH AN IMPORTANT
FACTOR. IT WOULD RETAIN THE EMINENT ROLE OF THE
AUTOMOBILE WHILE EVOLVING THE TRANSPORTATION SYSTEMS
TOWARD MORE SOCIALLY SATISFYING MEANS.
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 704 126 21/9 13/2 7/2
OREGON STATE UNIV CORVALLIS RADIATION CENTER

STUDIES ON ENVIRONMENTAL POLLUTION BY MISSILE
PROPELLANTS. (U)

DESCRIPTIVE NOTE: FINAL REPT., 1 JUL 67-30 JUN 69,
JAN 70 45P DOST, FRANK N. ; CHIH H.

WANG,;

CONTRACT: F33615-67-C-1750

PROJ: AF-6302

TASK: 630204

MONITOR: AMRL TR-69-116

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, *ROCKET PROPELLANTS),
(*LIQUID ROCKET OXIDIZERS, *TOXICITY), (*PLANTS(BOTANY),
AIR POLLUTION), DECONTAMINATION, GASEOUS ROCKET
PROPELLANTS, CHLORINE COMPOUNDS, FLUORIDES, NITROGEN
COMPOUNDS, OXYGEN COMPOUNDS, WATER, FISHES (U)
IDENTIFIERS: FLUORIDES, NITROGEN COMPOUNDS, *CHLORINE
FLUORIDES, FLUORINE OXIDE, HYDRAZINE TETRAFLUORIDE,
TRIFLUOROAMINE OXIDE (U)

THE EFFECTS OF NF30 ON LOWER ORGANISMS HAVE
BEEN SURVEYED. THE GAS CAUSES MINIMUM DAMAGE TO
PLANTS WHEN EXPOSED FOR 30 MINUTES TO CONCENTRATIONS
AS LOW AS 5 PPM. EFFECTS ON GOLDFISH MAINTAINED IN
AQUARIA UNDER 1% NF30 FOR 30 MINUTES WERE
NEGLECTIBLE; SALMON WERE MODERATELY SENSITIVE.
MICROORGANISMS IN SOIL WERE ONLY SLIGHTLY DECREASED
IN NUMBERS BY ONE HOUR OF EXPOSURE BY CONTINUOUSLY
TUMBLING SOIL PARTICLES THROUGH 1% NF30.
POTENTIALLY USEFUL DECONTAMINATION REACTIONS WERE
STUDIED. INTERHALOGENS AND N2F4 CAN PROBABLY BE
REMOVED FROM THE ATMOSPHERE BY A MIST OF AQUEOUS
SODIUM BICARBONATE SOLUTION. NO REAGENT PORTABLE
ENOUGH AND SUFFICIENTLY EFFECTIVE TO REMOVE OF2 AND
NF30 GAS FROM THE ATMOSPHERE WAS FOUND. NF3 IS
VIRTUALLY NON-REACTIVE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 705 217 7/4 11/6
OHIO STATE UNIV RESEARCH FOUNDATION COLUMBUS

HIGH TEMPERATURE ELECTROCHEMICAL RESEARCH IN
METALLURGY, (U)

APR 70 32P BOOSTEIN, W. M. ; RAPP, R.
A. ; ST. PIERRE, G. R. ;
CONTRACT: F33615-70-C-1103, ARPA ORDER-1466

UNCLASSIFIED REPORT

DESCRIPTORS: (*METALLURGY, *ELECTROCHEMISTRY), (*LIQUID
METALS, ELECTROCHEMISTRY), (*EXHAUST GASES, ADSORPTION),
GASES, OXYGEN, ADSORPTION, IRON, COPPER, PASSENGER
VEHICLES (U)

IDENTIFIERS: LIQUID COPPER, *ELECTROLYTES, *FUSED
SALTS, AUTOMOBILE EXHAUST, COULOMETRY (U)

THE FOLLOWING FIVE AREAS OF RESEARCH ARE
DISCUSSED: A DEVICE FOR THE CONTROL OF OXYGEN
ACTIVITIES IN GASES; A STUDY OF CHARACTERISTICS OF
COULOMETRIC PUMPING AND THE CONTROL OF ITS RATE INTO
HIGH TEMPERATURE GASES; THE COULOMETRIC CONTROL OF
OXYGEN IN LIQUID METALS; KINETIC STUDY OF OXYGEN
ABSORPTION BY MOLTEN IRON AND IRON ALLOYS; AND THE
DESIGN AND TESTING OF AN ELECTROCATALYTIC AFTERBURNER
FOR AUTOMOBILE EXHAUST EMISSIONS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 707 118 1/3 1/1
AIR WEATHER SERVICE SCOTT AFB ILL

INTRODUCTION TO JET-ENGINE EXHAUST AND TRAILING
VORTEX WAKES. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
APR 70 34P JONES, DALE N. ;
REPT. NO. AWS-TR-226

UNCLASSIFIED REPORT

DESCRIPTORS: (*JET TRANSPORT PLANES, WAKE), (*JET
ENGINES, *EXHAUST GASES), VORTICES, TAXIING, TRAILING
EDGE, MANEUVERABILITY, MATHEMATICAL ANALYSIS, REVIEWS (U)
IDENTIFIERS: BOEING 747 AIRCRAFT, C-5 AIRCRAFT (U)

THE REPORT IS A RESULT OF A SURVEY OF THE
IMMEDIATELY AVAILABLE LITERATURE ON AIRCRAFT WAKES.
WHILE IT SHOULD NOT BE CONSIDERED THE FINAL WORD ON
THE SUBJECT, IT IS A GOOD GENERAL REPRESENTATION OF
TECHNIQUES AND PROBLEMS INVOLVED. (AUTHOR)
THE SIMPLE, APPROXIMATE RELATIONS USED ARE CHOSEN
FOR THEIR SIMPLICITY AND SHOULD RESULT IN AN ACCURACY
USEFUL TO DEFINE AREAS DANGEROUS TO FLIGHT. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 709 896 6/11 13/10 7/4

NAVAL RESEARCH LAB WASHINGTON D C

CHEMICAL RESEARCH IN NUCLEAR SUBMARINE ATMOSPHERE
PURIFICATION.

(U)

DESCRIPTIVE NOTE: PROGRESS REPT.,

JUN 70 61P PIATT, V. R. RAMSKILL, E.

A. I

REPT. NO. NRL-7037

PROJ: NRL-C08-05, SF35-433-02

TASK: 13213

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO ANNUAL PROGRESS REPT. NO.
5, AD-648 505.

DESCRIPTORS: (*LIFE SUPPORT, *SUBMARINES), (*CONFINED
ENVIRONMENTS, CONTAMINATION), (*HYDROCARBONS, AIR
POLLUTION), (*CARBON DIOXIDE, AIR POLLUTION), ORGANIC
SOLVENTS, FLUOROHYDROCARBONS, UNDERWATER VEHICLES,
CONTROL, SAMPLING, PAINTS, HALOGENATED HYDROCARBONS,
FIRE RESISTANT COATINGS, CLEANING COMPOUNDS, EXHAUST
GASES, GAS CHROMATOGRAPHY, MASS SPECTROSCOPY, MARINE
NUCLEAR PROPULSION

(U)

IDENTIFIERS: METHANE/DICHLORODIFLUORO, NUCLEAR POWERED
SHIPS, SUBMARINES, *AIR POLLUTION CONTROL EQUIPMENT,
*AIR POLLUTION DETECTION, *HOPCALITE CATALYSTS

(U)

CONSIDERABLE PROGRESS HAS BEEN MADE IN DEVELOPING
BOTH LABORATORY AND SHIPBOARD METHODS OF SAMPLING,
ANALYSIS, AND CONTROL, BUT MAJOR SHIPBOARD
ANALYTICAL EQUIPMENT CONTINUES TO BE OF MARGINAL
QUALITY. SOME OF THE TOPICS COVERED INCLUDE A FIRE-
RETARDANT AND NONTOXIC PAINT SYSTEM FOR APPLICATION
WHEN NECESSARY DURING SUBMERGENCE, ATMOSPHERIC
CONTAMINATION WITH A CLEANING SOLVENT, THE NRL
TOTAL HYDROCARBON ANALYZER, CATALYZED COMBUSTION
OF VARIOUS TYPES OF ATMOSPHERIC CONTAMINANTS, AND
CO2 ABSORPTION PROPERTIES OF SOME NEW AMINES.
(AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 710 456 6/11 13
NAVAL RESEARCH LAB WASHINGTON D C

SOURCES AND REMOVAL OF CARBON MONOXIDE IN HYPERBARIC
ATMOSPHERES, (U)

DEC 69 14P UMSTEAD, MERLE E. ; MUSICK,
JAMES K. ; JOHNSON, J. ENOCH ;
PROJ: AF-6302
MONITOR: AMRL TR-69-130-PAPFR-19

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN PROCEEDINGS OF THE ANNUAL
CONFERENCE ON ATMOSPHERIC CONTAMINATION IN CONFINED
SPACES (5TH) P275-287, 16-18 SEP 69.

DESCRIPTORS: (*CONFINED ENVIRONMENTS, *AIR POLLUTION),
(*CARBON MONOXIDE, AIR POLLUTION), (*DEEP SUBMERGENCE,
CONFINED ENVIRONMENTS), COMBUSTION PRODUCTS, ADSORPTION,
CATALYSTS, GAS CHROMATOGRAPHY, UNDERWATER VEHICLES,
COOKING DEVICES (U)

IDENTIFIERS: *MANNED SUBMERSIBLES, AIR POLLUTION
CONTROL EQUIPMENT, SEALAB 3 MANNED SUBMERSIBLE,
*HOPCALITE CATALYSTS, *INDOOR AIR POLLUTION, DISSOLVED
GASES (U)

A STUDY WAS CARRIED OUT ON SOME POTENTIAL SOURCES
OF CARBON MONOXIDE IN HYPERBARIC ATMOSPHERES, ITS
ANALYSIS, AND ITS REMOVAL FROM THESE ENVIRONMENTS.
TOASTING BREAD AND BROILING MEAT HAS BEEN SHOWN TO
PRODUCE SIGNIFICANT QUANTITIES OF THIS GAS IN A
CLOSED ATMOSPHERE. ACTIVATED CHARCOAL BEDS WHEN
OPERATED NEAR ROOM TEMPERATURE PRODUCE VERY LITTLE
CO BY REACTIONS OF THE CARBON WITH ATMOSPHERIC
OXYGEN. HOWEVER, SIGNIFICANT AMOUNTS OF CO CAN BE
PRODUCED IF THE CARBON IS HEATED MUCH IN EXCESS OF
200 F. DISSOLVED CO IN THE OCEAN COULD BE A
SOURCE OF THIS GAS IN THE ATMOSPHERE OF UNDERSEA
CAPSULES HAVING AN OPEN INTERFACE WITH THE SEA.
HOPCALITE CATALYST OPERATED AT 600 F IS AN
EFFECTIVE MEANS OF REMOVING CO FROM HIGH PRESSURE
HELIUM ATMOSPHERES CONTAINING LOW OXYGEN
CONCENTRATION. BY THE USE OF GAS CHROMATOGRAPHY,
SENSITIVE METHODS HAVE BEEN DEVELOPED FOR THE
ANALYSIS FOR CO AT THE ONE PART PER MILLION LEVEL.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 713 222 7/4 14/2
BARKLEY AND DEXTER LABS INC FITCHBURG MASS

RESEARCH DIRECTED TOWARD THE EXPERIMENTAL
INVESTIGATION OF METHODS OF ANALYZING SO₂:SO₃
RATIOS IN JET EXHAUSTS. (U)

DESCRIPTIVE NOTE: FINAL REPT. 15 AUG 66-14 AUG 69,
MAY 70 32P DAY, LAWRENCE R. ; DUNTON,
EDWIN C. ; WILSON, RAYMOND B. ; ZINCHUK, MICHAEL

CONTRACT: AF 19(628)-6137
PROJ: AF-8679
TASK: 867901
MONITOR: AFCRL 70-0279

UNCLASSIFIED REPORT

DESCRIPTORS: (*JET ENGINES, *EXHAUST GASES), (*AIR
POLLUTION, EXHAUST GASES), (*ULTRAVIOLET DETECTORS,
*SULFUR COMPOUNDS), TEST METHODS, DIOXIDES, OXIDES,
CHEMICAL ANALYSIS, INFRARED DETECTORS,
CONCENTRATION(CHEMISTRY), IONIZATION (U)
IDENTIFIERS: *AIR POLLUTION DETECTION, *SULFUR
DIOXIDE, *SULFUR TRIOXIDE (U)

RESEARCH WAS DIRECTED TOWARDS THE ANALYSIS OF
SO₂/SO₃ RATIOS IN JET EXHAUSTS AT TEMPERATURES OF
600C AND MACH I GAS STREAMS. SPECTRAL
ABSORBANCE MEASURING TECHNIQUES IN THE ULTRA VIOLET
REGION OF THE SPECTRUM APPEARED TO OFFER THE BEST
METHOD OF MEASUREMENT. EQUIPMENT WAS DESIGNED AND
DEVELOPED INCORPORATING THESE TECHNIQUES. OTHER
ASPECTS OF JET EXHAUSTS WERE ALSO INVESTIGATED
INCLUDING CONTRAIL SCATTERING AND IONIZATION EFFECTS.
EQUIPMENT WAS ALSO DEVELOPED FOR THE MEASUREMENT OF
INFRARED RADIATION FROM A JET ENGINE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 713 612 21/5

AIR FORCE AERO PROPULSION LAB WRIGHT-PATTERSON AFB
OHIO

PARAMETERS AFFECTING THE MEASUREMENT OF AERO ENGINE
EXHAUST SMOKE: A STATISTICAL ANALYSIS OF TEST
DATA. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT. SEP 69-FER 70,

AUG 70 66P CHAMPAGNE, DONALD L. ;

REPT. NO. AFAPL-TR-70-23

PROJ: AF-3048

TASK: 304805

UNCLASSIFIED REPORT

DESCRIPTORS: (*SMOKE, MEASUREMENT), (*AIRCRAFT ENGINES,
*EXHAUST GASES), STATISTICAL ANALYSIS, STANDARDS,
REFLECTOMETERS (U)
IDENTIFIERS: *SMOKE ABATEMENT, COMPUTER ANALYSIS (U)

THE REPORT DESCRIBES A COMPUTERIZED STATISTICAL
ANALYSIS OF TEST DATA FROM ENGINE SMOKE MEASUREMENTS.
THE ANALYSIS INDICATED THAT TEST DATA CAN BE USED
TO ARRIVE AT STATISTICALLY MEANINGFUL CONCLUSIONS
ABOUT FOUR MEASURING SYSTEM PARAMETERS.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 713 913 13/2

RUTGERS - THE STATE UNIV NEW BRUNSWICK N J EAGLETON INST
OF POLITICS

COMPARISON OF AIR POLLUTION FROM AIRCRAFT AND
AUTOMOBILES (PROJECT EAGLE).

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

SEP 70 189P BRIGHT, COOPER ; LAMMINEN,
TOIVO ; MULLALLY, JAMES ; MARKOWITZ, FOREST ; SINGER,
STANFORD M. ;

CONTRACT: W1-70-1919-1

MONITOR: FAA-NO 70-14

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, *EXHAUST GASES), (*AIR
TRANSPORTATION, AIR POLLUTION), (*TRANSPORTATION, AIR
POLLUTION), (*SHORT TAKEOFF AIRCRAFT, TRANSPORTATION),
CONTROL, PASSENGER VEHICLES, CONNECTICUT, NEW JERSEY,
NEW YORK, AIRPORTS, ATMOSPHERIC MOTION, CARBON MONOXIDE,
DIFFUSION (U)

IDENTIFIERS: MASS TRANSPORTATION, ABATEMENT, *AIR
POLLUTION, *CONTROL, *AUTOMOBILE EXHAUST, COMPARISON,
*HIGHWAY TRANSPORTATION, *JET ENGINE EXHAUST, EAGLE
PROJECT (U)

THIS INVESTIGATION INTO THE ENVIRONMENTAL ASPECTS
OF ESTABLISHING AN URBAN AIR TRANSPORTATION SYSTEM
FOR THE TRI-STATE AREA OF CONNECTICUT, NEW
JERSEY, AND NEW YORK FOR DAILY COMMUTING
DEMONSTRATES THAT AIR POLLUTION AND ITS ASSOCIATED
PHYSIOLOGICAL EFFECTS, WHICH ARE CREATED BY
AUTOMOBILE ENGINE EMISSIONS, CAN BE DRASTICALLY
REDUCED. SIMILAR RESULTS PERTAIN WHEN STOL AIR
TRANSPORTATION IS SUBSTITUTED FOR AUTOMOBILES TO
PROVIDE SERVICE FOR THE SAME AREA TO THE THREE MAJOR
AIRPORTS AROUND NEW YORK CITY. FURTHER, THE
STUDY SHOWS THAT AIR POLLUTION AT A STOLPORT IN
MANHATTAN SUPPORTING SUCH A SYSTEM WOULD BE LESS
THAN THE NORMAL BACKGROUND CONCENTRATION, EVEN DURING
PEAK TRAVEL PERIODS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 721 858 13/2 4/1
BATTELLE-NORTHWEST RICHLAND WASH PACIFIC NORTHWEST
LAB

THE MOUNTAIN IRON DIFFUSION PROGRAM:
PHASE 1. SOUTH VANDENBERG: VOLUME 1. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
NOV 67 289P HINDS, W. T. NICKOLA, P.
W. ;
REPT. NO. BNWL-572-VOL-1
CONTRACT: AT(45-1)-1830
MONITOR: AFWTR TR-67-1-VOL-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: INCLUDES REVISION DATED MAR 69.
ERRATA SHEET INSERTED. SEE ALSO VOLUME 2, AD-721
859.

DESCRIPTORS: (*EXHAUST GASES, DIFFUSION), (*ROCKET
PROPELLANTS, *AIR POLLUTION), (*LAUNCHING SITES, ROCKET
ENGINES), MATHEMATICAL MODELS, ATMOSPHERIC MOTION,
SAMPLING, TRACER STUDIES, WEATHER FORECASTING, TOXICITY,
HAZARDS, RANGES(FACILITIES), SAFETY, DATA PROCESSING,
CALIFORNIA (U)

IDENTIFIERS: MOUNTAIN IRON PROGRAM, ROCKET PROPELLANT
RELEASE STUDIES, VANDENBERG AIR FORCE BASE (U)

FIELD DIFFUSION EXPERIMENTS WERE CONDUCTED AT
VANDENBERG AIR FORCE BASE, CALIFORNIA,
DURING 1965 AND 1966. THIS PROGRAM, NICKNAMED
'MOUNTAIN IRON,' WAS UNDERTAKEN TO ESTABLISH
QUANTITATIVE DIFFUSION PREDICTIONS FOR USE AS RANGE
SAFETY TOOLS IN THE 'SOUTH VANDENBERG' BALLISTIC
AND SPACE VEHICLE OPERATIONS. THE ONLY POLLUTANT
SOURCE CHARACTER STUDIED WAS TOXIC PROPELLANT
MATERIALS RELEASED CONTINUOUSLY FROM GROUND LEVEL
POOLS. THIS VOLUME CONTAINS THE OPERATIONAL
APPLICATIONS AND LIMITATIONS OF THE EQUATIONS AND
OTHER RESULTS OBTAINED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 721 859 13/2 4/1
BATTFLE-NORTHWEST RICHLAND WASH PACIFIC NORTHWEST
LAB

THE MOUNTAIN IRON DIFFUSION PROGRAM:
PHASE I. SOUTH VANDENBERG: VOLUME II.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
JAN 68 228P HINDS, W. T. ; NICKOLA, P.
W. ;
REPT. NO. BNWL-572-VOL-2
CONTRACT: AT(45-1)-1830
MONITOR: AFWTR TR-67-1-VOL-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 1, AD-721 858 AND
VOLUME 3, AD-721 860.

DESCRIPTORS: (*EXHAUST GASES, DIFFUSION), (*ROCKET
PROPELLANTS, *AIR POLLUTION), (*LAUNCHING SITES, ROCKET
ENGINES), (*ATMOSPHERIC MOTION, CLIMATE), METEOROLOGICAL
PHENOMENA, SAMPLING, MATHEMATICAL MODELS, TRACER
STUDIES, TRAJECTORIES, DATA PROCESSING, DETECTORS,
RANGES(FACILITIES), CALIFORNIA (U)
IDENTIFIERS: MOUNTAIN IRON PROGRAM, ROCKET PROPELLANT
RELEASE STUDIES, VANDENBERG AIR FORCE BASE (U)

THE ADVENT OF AIR FORCE MISSILE OPERATIONS AT
SOUTH VANDENBERG BROUGHT THE NEED FOR PREDICTION
OF HAZARDS INVOLVED IN NONROUTINE CIRCUMSTANCES.
THE PURPOSE OF THE STUDY WAS TO DETERMINE AN
EMPIRICAL DIFFUSION EQUATION FOR SOUTH
VANDENBERG. THE SCOPE OF THE OPERATION INCLUDED
(1) TRACER RELEASES FROM TWO SITES NEAR TWO
LAUNCH POINTS AND COLLECTION OF DIFFUSION AND
METEOROLOGICAL DATA OVER SOUTH VANDENBERG;
(2) REDUCTION AND ANALYSIS OF DIFFUSION AND
METEOROLOGICAL DATA FOR SOUTH VANDENBERG.
BEYOND THIS, THE ANALYSIS YIELDED ADDITIONAL
INFORMATION ON TRAJECTORIES AND WIND SYSTEM STATION
SUITABILITY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 721 860 13/2 4/1
BATTELLE-NORTHWEST RICHLAND WASH PACIFIC NORTHWEST
LAB

THE MOUNTAIN IRON DIFFUSION PROGRAM:
PHASE II. SOUTH VANDENBERG: VOLUME 3.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,

SFP 69 316P DAUBEK, H. G. ; DOTSON, W.
L. ; RAMSDELL, J. V. ; NICKOLA, P. W. ;
REPT. NO. BNWL-572-VOL-3
CONTRACT: AT(45-1)-1830
MONITOR: AFWTR TR-67-1-VOL-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-721 859.

DESCRIPTORS: (*EXHAUST GASES, DIFFUSION), (*ROCKET
PROPELLANTS, *AIR POLLUTION), (*LAUNCHING SITES, ROCKET
ENGINES), MATHEMATICAL MODELS, REGRESSION ANALYSIS, ZINC
SULFIDES, ATMOSPHERIC MOTION, TRACER STUDIES, HAZARDS,
TOXICITY, RANGES(FACILITIES), SAFETY, CLIMATE,
CALIFORNIA (U)

IDENTIFIERS: MOUNTAIN IRON PROGRAM, ROCKET PROPELLANT
RELEASE STUDIES, VANDENBERG AIR FORCE BASE (U)

A SERIES OF FIELD DIFFUSION EXPERIMENTS CONDUCTED
AT VANDENBERG AIR FORCE BASE, CALIFORNIA
ARE DISCUSSED. THESE TESTS WERE DESIGNED TO
PROVIDE THE NECESSARY DATA FROM WHICH AN EMPIRICAL
EQUATION, DERIVED BY MULTIPLE REGRESSION ANALYSIS,
HAS BEEN DEVELOPED. THIS EQUATION IS TO BE USED AS
A RANGE SAFETY TOOL IN SUPPORT OF MISSILE ACTIVITIES
ON THE AIR FORCE WESTERN TEST RANGE AT THE
SUDDEN RANCH LAUNCEY COMPLEX, SLC-6. THE
FIELD EXPERIMENTS UTILIZED A FLUORESCENT PIGMENT,
ZINC SULFIDE, U. S. RADIUM CORPORATION
DESIGNATION NO. 2210, AS A TRACER. APPROXIMATELY
500 ASPIRATED FILTERS, LOCATED AT 1.5 M ABOVE THE
GROUND, WERE INSTALLED ALONG CONCENTRIC ARCS AT 500,
800 AND 1000 M FROM THE SOURCE, AND ALONG ROADWAYS AT
GREATER DOWNWIND DISTANCES. THESE SAMPLERS
PROVIDED MEASUREMENTS OF THE DOWNWIND TIME-INTEGRATED
DISTRIBUTION OF THE TRACER. THESE DATA WERE
SUPPLEMENTED BY: GROUND AND AERIAL AIR
CONCENTRATION SAMPLING; AND, METEOROLOGICAL DATA FROM
SEVERAL SITES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 722 832 21/2 13/2
SOUTHWEST RESEARCH INST SAN ANTONIO TEX

BASELINE EXHAUST EMISSIONS FROM U. S.
ARMY M54A2 LDS 465 POWERED FIVE-TON
TRUCKS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
APR 69 45P SPRINGER, KARL J. I
REPT. NO. SWRI-AR-690
CONTRACT: DAAD05-67-C-0361
PROJ: SWRI-08-2073-03

UNCLASSIFIED REPORT

DESCRIPTORS: (*DIESEL ENGINES, *EXHAUST GASES), (*AIR
POLLUTION, EXHAUST GASES), (*ODORS, EXHAUST GASES),
CARGO VEHICLES, SMOKE, HYDROCARBONS, CARBON MONOXIDE,
CARBON DIOXIDE, NITROGEN OXIDES, SULFUR COMPOUNDS,
ALDEHYDES, TEST METHODS (U)
IDENTIFIERS: *MOTOR TRUCKS, *SMOKE ABATEMENT, SULFUR
DIOXIDE, *DIESEL ENGINE EXHAUST (U)

BASELINE EXHAUST EMISSIONS DATA WERE OBTAINED AS
PART OF A 20,000-MI TEST OF LUBE OILS IN FOUR
M54A2 FIVE-TON ARMY TRUCKS POWERED BY THE LDS
465 TURBOCHARGED, FOUR-CYCLE, COMPRESSION IGNITION
ENGINE. THESE EMISSIONS INCLUDED ODOR, SMOKE AND
CHEMICAL/INSTRUMENTAL MEASUREMENTS OF TOTAL UNBURNED
HYDROCARBONS, CARBON MONOXIDE, CARBON DIOXIDE, OXIDES
OF NITROGEN, NITRIC OXIDE, TOTAL ALIPHATIC ALDEHYDES,
FORMALDEHYDE, ACROLEIN AND SULFUR DIOXIDE USING THE
LATEST TECHNIQUES AVAILABLE. POWER CHECKS AS WELL
AS EMISSIONS WERE OBTAINED AT THE BEGINNING, END, AND
AT ABOUT 6,500 AND 12,000 MI DURATION. THE EFFECTS
OF VEHICLE OPERATING CONDITION AND TEST MILEAGE ARE
PRESENTED AS PART OF THE ANALYSIS OF THE RESULTS.
TYPICAL DATA FOR TWO WIDELY USED, COMMERCIAL TRUCK-
TRACTORS POWERED BY FOUR-CYCLE, NATURALLY ASPIRATED
AND TURBOCHARGED ENGINES ARE INDICATED TO PLACE THE
MILITARY TRUCK EMISSIONS IN PERSPECTIVE. LIMITED
BACK-TO-BACK TYPE OPERATION OF TWO VEHICLES ON A
COMMERCIAL BARIUM SMOKE SUPPRESSANT FUEL ADDITIVE WAS
CONDUCTED PERIODICALLY AND THE CONSTANT AND TRANSIENT
SMOKE RESULTS ARE PRESENTED. IN ADDITION TO
SUMMARY AND CONCLUSIONS, RECOMMENDATIONS ARE MADE TO
LEARN MORE ABOUT EXHAUST EMISSIONS FROM VEHICLES IN
THE CURRENT AND FUTURE ARMY INVENTORY.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 724 046 4/1 13/2
ISTITUTO DI FISICA DELL'ATMOSFERA ROME (ITALY)

CONDENSATION NUCLEI MEASUREMENTS IN AN URBAN
AREA.

(U)

MAR 70 7P COLACINO, M. ; FRANCO, R. ;
VIVONA, F. M. ;
REPT. NO. IFA-CP-230

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN ATMOSPHERIC ENVIRONMENT,
V4 P443-445 1970. NO COPIES FURNISHED BY DDC OR
NTIS.

DESCRIPTORS: (*ATMOSPHERES, AEROSOLS), (*AIR POLLUTION,
URBAN AREAS), CONDENSATION, NUCLEATION, COUNTING
METHODS, HUMIDITY, EXHAUST GASES, HEATING, PARTICLES,
ITALY

(U)

SYSTEMATIC COUNTINGS OF CONDENSATION NUCLEI WERE
CARRIED OUT AT IFA--CHEMICAL LABORATORY
(ROME, ITALY) WITH A NOLAN-POLLAK NUCLEI
COUNTER. THE DATA WERE ELABORATED EVERY MONTH AND
SHOW THAT: (1) DRY WEATHER WITH AN OVERCAST
SKY IS GENERALLY ASSOCIATED WITH A LARGE NUMBER OF
NUCLEI; ON THE CONTRARY, CLEAR SKY IS ALMOST ALWAYS
ASSOCIATED WITH A SMALLER NUMBER OF NUCLEI. THIS
BEHAVIOUR IS EXPLAINED BY THE FACT THAT OVERCAST SKY
CORRESPONDS TO A SUBSIDENCE SITUATION, WHILE CLEAR
SKY IS ASSOCIATED WITH STRONG WINDS, WHICH CAUSE AIR
TURBULENCE AND, AS CONSEQUENCES, AIR MIXING AND A
DECREASE IN THE CONDENSATION NUCLEI NUMBER; (2)
DURING RAIN THE CONDENSATION NUCLEI NUMBER IS LOW DUE
TO THE WASH-OUT EFFECT OF THE PRECIPITATION; (3)
A REMARKABLE CORRELATION BETWEEN AIR RELATIVE
HUMIDITY AND CONDENSATION NUCLEI NUMBER WAS FOUND.
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 724 408 7/4

CALIFORNIA UNIV LOS ANGELES DEPT OF CHEMISTRY

PROMISING CATALYST FOR AUTO EXHAUST,

(U)

DEC 70 2P LIBBY, W. F. ;
CONTRACT: AF-AFOSR-1255-67
PROJ: AF-9538
MONITOR: AFOSR TR-71-1413

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN SCIENCE, V171 P499-500 FEB 71.

DESCRIPTORS: (*CATALYSTS, *EXHAUST GASES), (*AIR POLLUTION, EXHAUST GASES), (*LANTHANUM COMPOUNDS, CATALYSTS), SYNTHESIS(CHEMISTRY), COSTS, COBALT COMPOUNDS, OXIDES, HYDROCARBONS, ALKENES, GAS FLOW, PASSENGER VEHICLES

(U)

IDENTIFIERS: *AIR POLLUTION CONTROL EQUIPMENT, AUTOMOBILE EXHAUST, *CATALYTIC REACTORS(EXHAUST SYSTEMS), COBALTATES, *LANTHANUM COBALTATE

(U)

MEADOWCRAFT'S (NATURE V226 P847 1970) REPORT THAT $\text{Sr}_{0.2}\text{La}_{0.8}\text{CoO}_3$ RIVALED PLATINUM AT THE AQUEOUS OXYGEN ELECTRODE HAS LED TO A TEST OF LaCoO_3 ITSELF FOR ACTIVITY IN THE GAS PHASE. IT IS REPORTED THAT IT DOES APPEAR TO RIVAL PLATINUM IN THE GAS PHASE AS WELL AND SUGGEST THAT IT SHOULD BE TESTED AS A POTENTIAL AUTO EXHAUST CATALYST. MEADOWCRAFT ESTIMATED THAT THE COST OF THIS CATALYST WOULD BE ABOUT \$1 PER POUND.
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 726 249 13/2
IIT RESEARCH INST CHICAGO ILL

STUDY OF VISIBLE EXHAUST SMOKE FROM
AIRCRAFT JET ENGINES.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

JUN 71 68P STOCKHAM, JOHN ; BETZ, HOWARD ;
CONTRACT: DOT-FA69WA-2208
MONITOR: FAA-NA, FAA-RD 71-24, 71-22

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, EXHAUST GASES), (*AIRCRAFT
ENGINES, AIR POLLUTION), (*JET ENGINES, AIR POLLUTION),
(*EXHAUST GASES, VISIBILITY), PARTICLES, PHOTOGRAPHY,
MATHEMATICAL MODELS, LIGHT TRANSMISSION, SCATTERING,
TURBOJET ENGINES (U)

IDENTIFIERS: LIGHT SCATTERING, *SMOKE NUMBER, SMOKE,
*JET ENGINE EXHAUST (U)

THE OBJECTIVE OF THIS STUDY WAS TO RELATE THE
VISIBILITY OF INFLIGHT JET EXHAUST TO THE SAE SMOKE
NUMBER. A METHOD BASED ON PHOTOGRAPHIC PHOTOMETRY
WAS DEVELOPED FOR MEASURING THE OPTICAL DENSITY OF
SMOKE PLUMES. THIS METHOD WAS RELATED TO
VISIBILITY AND TO THE SMOKE NUMBER THROUGH
TRANSMISSOMETER MEASUREMENTS AND VISIBILITY THEORY.
A PORTABLE TRANSMISSOMETER, CAPABLE OF OPERATING
OVER A WIDE RANGE OF OPTICAL PATH LENGTHS AND UNDER
VARYING AMBIENT LIGHT CONDITIONS WAS FABRICATED FOR
USE ON THIS STUDY. THE MATHEMATICAL EXPRESSION
RELATING THE TRANSMISSION MEASUREMENTS TO THE SMOKE
NUMBER WAS DERIVED. LIMINAL VISIBILITY
REQUIREMENTS OF SMOKE TRAILS, DEVELOPED FROM LIGHT
SCATTERING THEORY, CORRELATED WITH ACTUAL VISUAL
OBSERVATIONS AND THE TRANSMISSOMETER AND PHOTOMETRY
MEASUREMENTS. TEST RESULTS, WITH THE ENGINES
INVESTIGATED, INDICATE THAT SAE SMOKE NUMBERS BELOW
23 WERE ASSOCIATED WITH INVISIBLE EXHAUST PLUMES.
SAMPLES OF THE EXHAUST SMOKE SHOWED THE PARTICLES
TO BE COMPOSED OF LACY AGGLOMERATES. AT THE
NOZZLE, THE GEOMETRIC MEDIAN PARTICLE DIAMETER WAS
0.052 MICROMETERS. AT A DISTANCE OF 10 NOZZLE
DIAMETERS THE GEOMETRIC MEDIAN PARTICLE DIAMETER WAS
0.13 MICROMETER AT CRUISE CONDITION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 726 999 13/2 21/8.2 21/2
AIR FORCE ROCKET PROPULSION LAB EDWARDS AFB CALIF

ATMOSPHERIC DIFFUSION OF BERYLLIUM (PROJECT
ADOBE).

(U)

DESCRIPTIVE NOTE: FINAL REPT. 1 APR 64-1 NOV 67,
JUL 71 116P TUCKER, GORDON L. ; MALONE,
HUGH E. ; SMITH, ROBERT W. ;
REPT. NO. AFRPL-TR-70-65-VOL-1
PROJ: AF-305999099, AF-305907024

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, BERYLLIUM), (*BERYLLIUM,
DIFFUSION), (*ROCKET ENGINES, PROPELLANTS), EXHAUST
GASES, CLOUDS, TRACKING, CHEMICAL ANALYSIS, TEST
EQUIPMENT, TEST METHODS (U)
IDENTIFIERS: ADOBE(ATMOSPHERE DIFFUSION OF BERYLLIUM),
ADOBE PROJECT, ATMOSPHERIC DENSITY, DIFFUSION (U)

A FIELD STUDY OF EXHAUST CLOUD DIFFUSION FROM SOLID
ROCKET MOTORS WAS CONDUCTED AT THE AIR FORCE
ROCKET PROPULSION LABORATORY. THE OBJECTIVE
OF THE PROGRAM WAS TO CORRELATE THE DIFFUSION OF
ROCKET MOTOR EXHAUST CLOUDS WITH MEASURABLE
METEOROLOGICAL VARIABLES UNDER BOTH STABLE AND
UNSTABLE ATMOSPHERIC CONDITIONS. FIFTY-SEVEN SETS
OF FIELD DATA WERE COLLECTED FROM 250 TO 350 AIR
SAMPLERS PER TEST USING SOLID ROCKET MOTORS RANGING
FROM 100 TO 4000 POUNDS OF PROPELLANT CONTAINING
BERYLLIUM. THE WORK IS PRESENTED IN THREE VOLUMES.
VOLUME I DESCRIBES THE DIFFUSION EXPERIMENT, THE
CHEMICAL ANALYSIS PROGRAM, THE BIOENVIRONMENTAL
SAFETY PROGRAM, AND DISCUSSES THE DATA ANALYSIS AND
THE RESULTING DIFFUSION EQUATIONS FROM HOT
INSTANTANEOUS SOURCES. (AUTHOR)

(U)

UNCLASSIFIED

000M1

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 727 022 6/20
SYSTEMED CORP DAYTON OHIO

PROCEEDINGS OF THE ANNUAL CONFERENCE ON
ENVIRONMENTAL TOXICOLOGY (1ST) HELD AT
FAIRBORN, OHIO, ON 9-11 SEPTEMBER 1970.

(U)

DFC 70 389P
CONTRACT: F33615-70-C-1046
PROJ: AF-6302
MONITOR: AMRL TR-70-102

UNCLASSIFIED REPORT

DESCRIPTORS: (*CARBON MONOXIDE, TOXICITY),
(*PROPELLANTS, TOXICITY), (*AIR POLLUTION, TOXICITY),
(*TOXICITY, SYMPOSIA), METHYL HYDRAZINES, PATHOLOGY,
EXPOSURE (PHYSIOLOGY), CHEMICALS, ELECTRON MICROSCOPY,
GAS CHROMATOGRAPHY

(U)

THE REPORT IS A COMPILATION OF THE PAPERS PRESENTED
AND THE PROCEEDINGS OF THE 1ST ANNUAL
CONFERENCE ON ENVIRONMENTAL TOXICOLOGY,
SPONSORED BY THE SYSTEMED CORPORATION AND HELD
IN FAIRBORN, OHIO ON 9, 10, AND 11 SEPTEMBER
1970. MAJOR TECHNICAL AREAS DISCUSSED INCLUDED
TOXICOLOGICAL EVALUATION OF CARBON MONOXIDE,
METHODOLOGY, PATHOLOGY, ATMOSPHERIC CONTAMINANTS, AND
TOXICOLOGY OF PROPELLANTS AND OTHER MILITARY
CHEMICALS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 727 745 21/2 21/7
CURTISS-WRIGHT CORP WOOD-RIDGE N J

EXPLORATORY DEVELOPMENT PROGRAM ON THE
ROTATING COMBUSTION ENGINE USING THE RC1-90
TEST RIG.

(U)

DESCRIPTIVE NOTE: SPECIAL REPT.,
JAN 71 15P JONES, C. ; LAMPING, H. ;
CORWIN, H. R. ;
REPT. NO. CW-WR-70-052.S
CONTRACT: N00019-70-C-0371

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPPLEMENT TO REPORT DATED NOV 70,
AD-877 777.

DESCRIPTORS: (*EXHAUST GASES, EMISSIVITY), (*SPARK
IGNITION ENGINES, EXHAUST GASES), THROTTLING, SPARK
IGNITION, COMBUSTION, COMBUSTION PRODUCTS, AIR
POLLUTION, CATALYSIS, TEST METHODS

(U)

IDENTIFIERS: *ROTARY COMBUSTION ENGINES, JP-5
FUEL

(U)

THE REPORT COVERS ADDITIONAL TESTING OF THE
STRATIFIED CHARGE RC-90 ENGINE TO EXPLORE ITS
EXHAUST EMISSION CHARACTERISTICS PLUS A BRIEF
EVALUATION OF THE TEXACO IGNITION SYSTEM.
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 732 195 6/3
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB
OHIO

EXPOSURE OF MARIGOLD (TAGETES) TO GASEOUS
HYDROGEN CHLORIDE. (U)

DESCRIPTIVE NOTE: FINAL REPT. 6 NOV 70-2 JUN 71,
SEP 71 18P LIND, CHRISTOPHER T. ; LONDON,
SHELDON A. ;
REPT. NO. AMRL-TR-71-90
PROJ: AF-6302
TASK: 630204

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, *CHLORIDES),
(*PLANTS(BOTANY), AIR POLLUTION), EXHAUST GASES, SOLID
ROCKET PROPELLANTS, EXPOSURE, TOXICITY (U)
IDENTIFIERS: *ROCKET EXHAUST, *HYDROGEN CHLORIDE (U)

THE ASCERTAIN THE EXTENT OF ENVIRONMENTAL POLLUTION
PROBLEMS ATTENDANT WITH AIR FORCE MISSILE
OPERATIONS, MATURE FLOWERING MARIGOLD PLANTS WERE
EXPOSED TO ONE OF THE KNOWN EXHAUST PRODUCTS,
HYDROGEN CHLORIDE. ALL PLANTS DIED AFTER 5 MIN
EXPOSURE TO 2071 PPM THE HIGHEST CONCENTRATION USED.
AT 95 PPM NO EFFECT WAS NOTED. SEEDS OBTAINED
FROM THE EXPOSED PLANTS DID NOT APPEAR TO BE AFFECTED
BY THE HCL TREATMENT. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 733 111 13/2 1/5
BOEING SCIENTIFIC RESEARCH LABS SEATTLE WASH

ANALYSIS OF GROUND OPERATIONS AT
AIRPORTS.

(U)

DESCRIPTIVE NOTE: TECHNICAL PROPOSAL,
JAN 71 52P CAIRNS, R. BRYAN ;
REPT. NO. D1-82-1042

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIRPORTS, *AIR POLLUTION), CARBON
MONOXIDE, HYDROCARBONS, NITROGEN OXIDES, METEOROLOGY,
MATHEMATICAL MODELS, TAXIING, JET ENGINES, TAKE-OFF,
AIRCRAFT LANDINGS, REFUELING

(U)

THE POLLUTION SOURCE INVENTORY FOR AIRPORTS INCLUDE
AIRPLANE OPERATIONS (CATEGORIZED ACCORDING TO TAXI,
IDLE, TAKE-OFF, AND LANDING), AIRCRAFT SUPPORT
VEHICLE OPERATIONS, VEHICULAR MOVEMENTS, STATIONARY
POWER AND HEAT-SOURCE OPERATIONS, AND FUELING
OPERATIONS. ALSO MEASUREMENTS ARE GIVEN OF CARBON
MONOXIDE, HYDROCARBONS, PARTICULATES, OXIDES OF
NITROGEN AND METEOROLOGICAL PARAMETERS. A
MATHEMATICAL DISPERSION MODEL IS USED TO DERIVE
CONTOUR MAPS OF INDIVIDUAL POLLUTANT CONCENTRATIONS.
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 733 505 13/2 15/5
ENVIRONMENTAL TECHNICAL APPLICATIONS CENTER (AIR FORCE)
WASHINGTON D C

DETERMINATION OF MAXIMUM EMISSION RATES TO
MEET AIR QUALITY STANDARDS. (U)

DESCRIPTIVE NOTE: TECHNICAL NOTE,
AUG 71 22P GREENWAY, A. ROGER ; LYDON,
DAVID S. ;
REPT. NO. USAFETAC-TN-71-9

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, *MILITARY FACILITIES),
(*ATMOSPHERIC MOTION, AIR POLLUTION), COMBUSTION
PRODUCTS, DIFFUSION, AIR FORCE OPERATIONS, WIND,
STANDARDS (U)
IDENTIFIERS: MILITARY AIR FACILITIES, AIR POLLUTION
STANDARDS, ATMOSPHERIC DIFFUSION, *FLUE GASES, TINKER
AIR FORCE BASE (U)

THE REPORT EXPLAINS BRIEFLY THE TECHNIQUE USED TO
CALCULATE FOR CERTAIN AIR FORCE BASES ALLOWABLE
STACK EMISSIONS WITHIN THE LIMITS OF THE
ENVIRONMENTAL PROTECTION AGENCY'S AIR
QUALITY STANDARDS. EXAMPLES OF SUCH
CALCULATIONS FOR CAPE KENNEDY AFS, KELLY
AFB, AND TINKER AFB ARE GIVEN. GRAPHS OF
'EMISSION RATE VS DOWNWIND DISTANCES' ARE
FURNISHED WHICH ALLOW DOWNWIND GROUND-CONCENTRATIONS
OF SPECIFIC POLLUTANTS TO BE READILY ESTIMATED FOR
EFFECTIVE STACK HEIGHTS OF 30, 50, AND 70 FEET.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 735 338 21/4

ARMY COATING AND CHEMICAL LAB ABERDEEN PROVING GROUND
MD

AUTOMOTIVE FUEL CONDITIONERS: THEIR
PROPERTIES AND EFFECTIVENESS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

DEC 71 26P LEPERA, MAURICE E. ;

SONNENBURG, JOHN G. ;

REPT. NO. CCL-299

PROJ: DA-1-T-062105-A-106

UNCLASSIFIED REPORT

DESCRIPTORS: (*PASSENGER VEHICLES, FUEL ADDITIVES),
(*GASOLINE, *FUEL ADDITIVES), TEST METHODS, SPARK
IGNITION ENGINES, EFFECTIVENESS, PHYSICAL PROPERTIES,
AIR POLLUTION

(U)

IDENTIFIERS: AUTOMOBILES

(U)

FUEL CONDITIONERS ARE MADE AVAILABLE TO CONSUMER
OUTLETS THROUGH SERVICE STATIONS, DISCOUNT STORES,
AND AUTOMOTIVE SUPPLY HOUSES, AND ARE DESIGNED TO BE
ADDED TO VEHICLE FUEL TANKS AS A 'SUPPLEMENT' TO
FINISHED GASOLINES. THESE CONDITIONERS HAVE BEEN
ADVERTISED TO IMPROVE THE OVERALL PERFORMANCE OF
INTERNAL-COMBUSTION ENGINES IN A VARIETY OF WAYS WITH
THE END RESULT THAT ENGINE EMISSIONS ARE REPORTED TO
BE REDUCED. PHYSIOCHEMICAL DATA WAS DEVELOPED ON
THE NINETEEN GASOLINE AND DIESEL FUEL CONDITIONERS TO
ASSIST IN UNDERSTANDING THE MECHANISM OF THEIR
ACTIVITY. THEIR EFFECTIVENESS WAS DETERMINED BY
LABORATORY BENCH-SCALE TESTS USING A SPECIALLY
DESIGNED APPARATUS WHICH SIMULATED AUTOMOTIVE
INDUCTION SYSTEM ENVIRONMENTS.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 735 943 13/2

DEPARTMENT OF TRANSPORTATION WASHINGTON D C LIBRARY
SERVICES DIV

AIRCRAFT AND AIR POLLUTION. SELECTED
READINGS.

(U)

DESCRIPTIVE NOTE: REPT. FOR 1960-1971,
DEC 71 66P POEHLMAN, DOROTHY J. ;
REPT. NO. BIBLIOGRAPHIC LIST-7

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, AIRCRAFT ENGINES),
(*AIRCRAFT ENGINES, *EXHAUST GASES), BIBLIOGRAPHIES,
AVIATION FUELS, DISPOSAL, SUPERSONIC AIRCRAFT, CLIMATE,
PARTICLES, AIRPORTS, ECOLOGY, GAS TURBINES, FUEL
ADDITIVES, MONITORS (U)
IDENTIFIERS: AIR POLLUTION DETECTION, AIR POLLUTION,
CONTROL, AIR POLLUTION CONTROL EQUIPMENT, *AIRCRAFT
EXHAUST, GOVERNMENT POLICIES (U)

PRESENTED IS A SELECTED, PARTIALLY ANNOTATED
LISTING OF PAPERS, REPORTS, AND PERIODICAL ARTICLES,
ON THE SUBJECT OF ENVIRONMENTAL POLLUTION CAUSED BY
AIRCRAFT EMISSIONS. NOISE POLLUTION IS NOT
INCLUDED. THE PERIOD COVERED IS FROM APPROXIMATELY
1960 - SPRING 1971. THE ARRANGEMENT IS BY
SUBJECT CATEGORIES WITH AUTHOR, CORPORATE SOURCE AND
GEOGRAPHIC INDEXES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 738 141 21/2 13/2
ARMY COATING AND CHEMICAL LAB ABERDEEN PROVING GROUND
MD

STUDYING THE FLAME RADIATION CHARACTERISTICS
OF DIESEL FUELS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

JAN 72 29P

LEPERA, MAURICE E. ; HARTZELL,

LYNDON G. ;

REPT. NO. CCL-301

PROJ: DA-1-T-062105-A-106

UNCLASSIFIED REPORT

DESCRIPTORS: (*FUEL OIL, COMBUSTION), (*SMOKE,
REDUCTION), (*AIR POLLUTION, EXHAUST GASES), TEST
EQUIPMENT, DIESEL ENGINES, FLAMES

(U)

IDENTIFIERS: *SMOKE SUPPRESSANT ADDITIVES

(U)

THE ASTM D-1740 LUMINOMETER APPARATUS WAS
EVALUATED AS A TECHNIQUE FOR RATING THE COMBUSTION
IMPROVING PROPERTIES OF DIESEL SMOKE SUPPRESSANT
ADDITIVES. PRELIMINARY EXPERIMENTATION, WHICH
REVEALED THE INADEQUACIES OF THIS APPROACH RESULTING
FROM POOR TEST REPEATABILITY, LED TO THE DEVELOPMENT
OF A NEW WICK PREPARED FROM GLASS-WOOL FIBERS.
FURTHER TESTING WAS CONDUCTED TO OPTIMIZE THE
CHARACTERISTICS OF THE EXPERIMENTAL GLASS FIBER WICK
WHICH WAS SUBSEQUENTLY RECOMMENDED FOR RATING THE
FLAME RADIATION PROPERTIES OF DIESEL FUELS.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 738 799 13/2
NAVAL RESEARCH LAB WASHINGTON D C

A SURVEY OF AUTOMOTIVE EMISSIONS.

(U)

DESCRIPTIVE NOTE: INTERIM REPT.,

OCT 71 42P LOCKHART, LUTHER B. ;ALI,
ABDUL W. ;MANGE, PHILLIP W. ;
REPT. NO. NRL-MR-2346
PROJ: NRL-K03-50

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, EXHAUST GASES), (*EXHAUST
GASES, *PASSENGER VEHICLES), CARBON MONOXIDE,
LEAD(METAL), REVIEWS, ATMOSPHERIC MOTION, PUBLIC HEALTH,
PLANTS(BOTANY), HYDROCARBONS, NITROGEN OXIDES,
PHOTOCHEMICAL REACTIONS, PARTICLES, ASBESTOS, TIRES (U)
IDENTIFIERS: AIR POLLUTION EFFECTS(PLANTS), AIR
POLLUTION EFFECTS(ANIMALS), *AUTOMOBILE EXHAUST,
AUTOMOBILE ENGINES, SMOG (U)

A SURVEY HAS BEEN MADE OF THE GENERATION, DISPERSAL
AND REMOVAL PROCESSES FOR THE VARIOUS AUTOMOTIVE
EMISSIONS AND THEIR NATURAL COUNTERPARTS IN THE
ATMOSPHERE, AND OF THEIR EFFECTS ON MAN AND HIS
ENVIRONMENT. IN ONLY A FEW CATEGORIES (I.E.,
CO, PB) ARE AUTOMOTIVE EMISSIONS OF
SIGNIFICANCE RELATIVE TO OTHER ANTHROPOGENIC OR
NATURAL SOURCES OF POLLUTANTS IN THE ATMOSPHERE AS A
WHOLE; HOWEVER, LOCALIZED EFFECTS CAN BE OVERRIDING
AS A RESULT OF PECULIAR GEOGRAPHICAL OR
METEOROLOGICAL FACTORS. UNDER CERTAIN CONDITIONS
OF POPULATION DENSITY, AUTOMOBILE USAGE AND WEATHER,
PHOTOCHEMICALLY MODIFIED AUTOMOTIVE EFFLUENTS HAVE
APPROACHED THE THRESHOLD TOXICITY LIMITS FOR
SUSCEPTIBLE INDIVIDUALS AND PLANTS. THERE ARE
APPARENTLY NO SIGNIFICANT LONG-TERM ATMOSPHERIC
CHANGES THAT MAN MIGHT PRODUCE WHICH CANNOT BE
RAPIDLY REVERSED AT ANY TIME BY MAN'S CURTAILMENT OF
HIS OWN ACTIVITIES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 738 801 13/2 14/2 13/6

NAVAL RESEARCH LAB WASHINGTON D C

LARGE-SCALE MONITORING OF AUTOMOBILE
EXHAUST PARTICULATES; METHODS AND COSTS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN-AUG 71,

OCT 71 26P

BIRKS, L. S. ; GILFRICH, J.

V. ; NAGEL, D. J. ;

REPT. NO. NRL-MR-2350

PROJ: NRL-K03-50

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, EXHAUST GASES), (*EXHAUST
GASES, *PASSENGER VEHICLES), MEASUREMENT, PARTICLE SIZE,
CHEMICAL ANALYSIS, MONITORS, COSTS, ATOMIC SPECTROSCOPY,
X RAY SPECTROSCOPY, SAMPLING, PARTICLES (U)

IDENTIFIERS: FLUORESCENCE, X RAYS, *MOTOR VEHICLE
INSPECTION, *AIR POLLUTION DETECTION, *AUTOMOBILE
EXHAUST, IMPACTORS (U)

THE HYPOTHETICAL PROBLEM ADDRESSED IS ANNUAL
MONITORING OF 150 MILLION CARS FOR EXHAUST
PARTICULATES. FOUR TOPICS ARE REVIEWED CONCERNING
THE PARTICULATES: TOTAL MASS EXPRESSED IN GRAMS
PER MILE; PARTICLE SIZE DISTRIBUTION; ELEMENTAL
ANALYSIS; STATE OF CHEMICAL COMBINATION. AT
PRESENT THE ONLY SPECIFICATION IS IN GRAMS PER MILE
BUT CONSIDERATION IS BEING GIVEN TO PARTICLE SIZE AND
TO ELEMENTAL ANALYSIS OF KNOWN HARMFUL CONSTITUENTS.
SINCE MANUFACTURERS WILL NOT BE TOLD HOW TO MEET
THE SPECIFICATIONS, A WIDE VARIETY OF EMISSION
CONTROL SYSTEMS MAY BE EXPECTED AND ALONG WITH THEM A
WIDE VARIETY OF PARTICULATE COMPOSITIONS.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 739 176 21/2 21/5
TENNESSEE UNIV SPACE INST TULLAHOMA

POLLUTANT PRODUCTION IN A SIMULATED TURBOJET
AFTERBURNER. PART I. EXPERIMENTAL AND
THEORETICAL STUDY. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 NOV 70-31 JUL 71,
FEB 72 139P CRAWFORD, LLOYD W. ; MASON,
ARTHUR A. ; LENTS, JAMES M. ;
CONTRACT: F33615-71-C-1125
PROJ: AF-3066
TASK: 306605
MONITOR: AFAPL TR-71-66-PT-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO PART 2, AD-739 177.

DESCRIPTORS: (*AIR POLLUTION, EXHAUST GASES),
(*AFTERBURNERS, *EXHAUST GASES), (*TURBOJET ENGINES,
EXHAUST GASES), CARBON MONOXIDE, HYDROCARBONS, NITROGEN
OXIDES, AIRCRAFT ENGINES, TEST METHODS, REACTION
KINETICS, MATHEMATICAL MODELS, INFRARED SPECTROSCOPY,
COMPUTER PROGRAMS, CONCENTRATION(CHEMISTRY) (U)
IDENTIFIERS: *AIRCRAFT EXHAUST (U)

AN EXPERIMENTAL AND THEORETICAL STUDY HAS BEEN MADE
OF THE HISTORY OF THE POLLUTANTS CARBON MONOXIDE
(CO), UNBURNED HYDROCARBONS (HC) AND NITROGEN
OXIDES (NO(X)) IN A TURBOJET AFTERBURNER.
EXPERIMENTAL TRAVERSES AT SEVERAL AXIAL STATIONS
WERE PERFORMED IN A SIMULATED AFTERBURNER IN WHICH
EXHAUST FROM A J-47 COMBUSTOR CAN, OPERATED AT
MEDIUM POWER, WAS MIXED WITH FUEL SPRAY.
EXPERIMENTS WERE CARRIED OUT BOTH IN A NON-BYPASS
AND IN A BYPASS CONFIGURATION (SECONDARY AIR WAS
MIXED WITH PRIMARY EXHAUST). THE THEORETICAL
ANALYSIS CONSISTED OF A COMPUTER PROGRAM FOR REACTING
FLOW WITH TURBULENT MIXING. INFRARED MEASUREMENTS
OF NO IN THE COMBUSTION TUNNEL WERE ATTEMPTED.
INDICATIONS WERE OBTAINED OF NO AT THE 5.3 MICRON
BAND, BUT QUANTITATIVE MEASUREMENTS WERE NOT
OBTAINED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 739 177 21/2 21/5
TENNESSEE UNIV SPACE INST TULLAHOMA

POLLUTANT PRODUCTION IN A SIMULATED TURBOJET
AFTERBURNER. PART II. COMPUTER PROGRAM FOR
CALCULATION OF POLLUTANT HISTORY IN
AFTERBURNING TURBOJET ENGINES. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 NOV 70-31 JUL 71,
FEB 72 71P CRAWFORD, LLOYD W. ; MASON,
ARTHUR A. ; LENTS, JAMES M. ;
CONTRACT: F33615-71-C-1125
PROJ: AF-3066
TASK: 306605
MONITOR: AFAPL TR-71-66-PT-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO PART 1, AD-739 176.

DESCRIPTORS: (*AIR POLLUTION, EXHAUST GASES),
(*AFTERBURNERS, EXHAUST GASES), (*TURBOJET ENGINES,
EXHAUST GASES), (*COMBUSTION PRODUCTS, COMPUTER
PROGRAMS), HANDBOOKS, CONCENTRATION(CHEMISTRY), REACTION
KINETICS, NITROGEN OXIDES, HYDROCARBONS, CARBON MONOX(U)
IDENTIFIERS: *AIRCRAFT EXHAUST (U)

THE USERS MANUAL WAS PREPARED TO PROVIDE THE MEANS
OF ESTIMATING AIR POLLUTION CONCENTRATIONS IN THE
EXHAUST GASES FROM AFTERBURNING TURBOJET ENGINES.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 739 777 13/2 14/2

ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT
PARIS (FRANCE)

ATMOSPHERIC POLLUTION BY AIRCRAFT ENGINES AND
FUELS--A SURVEY.

(U)

DESCRIPTIVE NOTE: ADVISORY REPT.,
MAR 72 40P SAWYER, ROBERT F. ;
REPT. NO. AGARD-AR-40

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: NATO FURNISHED.

DESCRIPTORS: (*AIR POLLUTION, EXHAUST GASES), (*EXHAUST
GASES, *AIRCRAFT ENGINES), (*SCIENTIFIC RESEARCH, AIR
POLLUTION), JET ENGINES, TEST METHODS, NITROGEN OXIDES,
CARBON MONOXIDE, HYDROCARBONS, UPPER ATMOSPHERE (U)
IDENTIFIERS: NITROGEN OXIDE(NO), AIRCRAFT EXHAUST,
RESEARCH MANAGEMENT (U)

A SURVEY OF ATMOSPHERIC POLLUTION BY AIRCRAFT
ENGINES AND FUELS AND RELATED RESEARCH WORK WAS
CONDUCTED. APPROXIMATELY 45 ORGANIZATIONS IN THE
UNITED STATES, UNITED KINGDOM, FRANCE,
THE NETHERLANDS, BELGIUM, GERMANY, AND
ITALY WERE CONTACTED AND OVER 100 RELEVANT PROGRAMS
IDENTIFIED. A LIST OF THE ORGANIZATIONS IS GIVEN.
AIRCRAFT PRODUCE A SMALL BUT SIGNIFICANT AND
INCREASING CONTRIBUTION TO AIR POLLUTION. TWENTY-
SEVEN CURRENT OR POTENTIAL PROBLEM AREAS FOR
INVESTIGATION ARE DESCRIBED AND RELATED WORK
OUTLINED. OF THESE AREAS, THE FIVE MOST PRESSING
ARE: ENGINE EMISSION CHARACTERISTICS; TEST
PROCEDURES; NITRIC OXIDE FORMATION; CARBON
MONOXIDE AND HYDROCARBONS AT LOW POWER; EFFECT OF
HIGH ALTITUDE EMISSIONS. RECOMMENDATIONS ARE
PRESENTED. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 741 249 21/2 21/5

NAVAL AIR PROPULSION TEST CENTER TRENTON N J AERONAUTICAL
TURBINE DEPT

STUDY OF ALTITUDE AND MACH NUMBER EFFECTS
ON EXHAUST GAS EMISSIONS OF AN AFTERBURNING
TURBOFAN ENGINE. (U)

DESCRIPTIVE NOTE: FINAL REPT.,

DEC 71 27P PALCZA, J. LAWRENCE ;

REPT. NO. NAPT-ATD-212

MONITOR: FAA-RD 72-31

UNCLASSIFIED REPORT

DESCRIPTORS: (*AFTERBURNERS, EXHAUST GASES), (*TURBOFAN
ENGINES, AFTERBURNERS), MACH NUMBER, AIR POLLUTION,
COMBUSTION PRODUCTS, SAMPLING, CORRELATION TECHNIQUES,
TEST METHODS, TRANSONIC CHARACTERISTICS (U)

IDENTIFIERS: TF-30 ENGINES (U)

A TF30-P-412 AUGMENTED TURBOFAN ENGINE WAS TESTED
AT SIMULATED ALTITUDES AND MACH NUMBERS TO
DETERMINE THE EFFECTS OF THESE PARAMETERS (ALTITUDE
AND MACH NUMBER) ON EXHAUST POLLUTION EMISSIONS.
EMISSION MEASUREMENTS WERE MADE OVER A RANGE OF
ENGINE POWER SETTINGS FROM IDLE TO FULL AUGMENTATION
AT ALTITUDES FROM SEA LEVEL TO 70,000 FEET AND A
MACH NUMBER RANGE OF 0 TO 1.8. THERE WAS NO
APPARENT EFFECT ON EMISSION LEVELS DUE TO ALTITUDE OR
MACH NUMBER. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 741 505 21/2 21/5 13/2
NORTHERN RESEARCH AND ENGINEERING CORP CAMBRIDGE MASS

THE CONTROL OF OXIDES OF NITROGEN EMISSIONS
FROM AIRCRAFT GAS TURBINE ENGINES. VOLUME

1. PROGRAM DESCRIPTION AND RESULTS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 70-DEC 71,

DEC 71 110P FLETCHER, RONALD S. ; SIEGEL,

RICHARD D. ; BASTRESS, E. KARL ;

REPT. NO. NREC-1162-1

CONTRACT: DOT-FA70WA-2428

MONITOR: FAA-RD 71-111-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-741 506.

DESCRIPTORS: (*AIRCRAFT ENGINES, EXHAUST GASES), (*AIR
POLLUTION, EXHAUST GASES), (*GAS TURBINES, *EXHAUST
GASES), (*NITROGEN OXIDES, *COMBUSTION), (*COMBUSTION
CHAMBERS, GAS TURBINES), GAS FLOW, MATHEMATICAL MODELS,
MIXTURES, REACTION KINETICS, DESIGN, COMBUSTION CHAMBER
LINERS (U)

IDENTIFIERS: MIXING, NITROGEN OXIDE(NO), *AIR
POLLUTION, *CONTROL, *AIRCRAFT EXHAUST (U)

THE OBJECTIVE OF THE STUDY WAS TO DEVELOP CRITERIA
FOR USE IN THE DESIGN OF AIRCRAFT GAS TURBINE
COMUSTION CHAMBERS TO MINIMIZE NITROGEN OXIDE
EMISSIONS. THE APPROACH ADOPTED INVOLVED THE
DEVELOPMENT OF A MATHEMATICAL MODEL OF NOX EMISSION
FROM AIRCRAFT ENGINE COMBUSTORS; A PARAMETRIC
ANALYSIS, USING THE MODEL, TO DETERMINE THE
SENSITIVITY OF NOX EMISSIONS TO VARIATIONS OF MODEL
PARAMETERS AND ENGINE DESIGN VARIABLES; EVALUATION OF
CRITICAL MODEL PARAMETERS BY MEANS OF EXPERIMENTAL
MEASUREMENTS; AND THE INCORPORATION OF THE MODEL INTO
COMBUSTOR DESIGN METHODS TO PROVIDE GUIDELINES FOR
MINIMIZING NOX EMISSION WHILE MAINTAINING OTHER
PERFORMANCE AND EMISSION CHARACTERISTICS. THE
RESULTS OF THE STUDY AND THE NOX EMISSION CONTROL
CRITERIA ARE DESCRIBED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 741 506 21/2 21/5 13/2
NORTHERN RESEARCH AND ENGINEERING CORP CAMBRIDGE MASS

THE CONTROL OF OXIDES OF NITROGEN EMISSIONS
FROM AIRCRAFT GAS TURBINE ENGINES. VOLUME
2. THE NOX FORMATION PROCESS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 70-DEC 71,
DEC 71 144P FLETCHER, RONALD S. ; SIEGEL,
RICHARD D. ;
REPT. NO. NPEC-1162-2
CONTRACT: DOT-FA70WA-2428
MONITOR: FAA-RD 71-111-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 1, AD-741 505 AND
VOLUME 3, AD-741 570.

DESCRIPTORS: (*AIRCRAFT ENGINES, EXHAUST GASES), (*AIR
POLLUTION, EXHAUST GASES), (*GAS TURBINE REGENERATORS,
*EXHAUST GASES), (*NITROGEN OXIDES, *COMBUSTION),
REACTION KINETICS, COMPUTER PROGRAMS,
THERMODYNAMICS

(U)

IDENTIFIERS: NITROGEN OXIDE(NO), *AIR POLLUTION,
*CONTROL, *AIRCRAFT EXHAUST

(U)

THE OBJECTIVE OF THE STUDY WAS TO DEVELOP CRITERIA
FOR USE IN THE DESIGN OF AIRCRAFT GAS TURBINE
COMBUSTION CHAMBERS TO MINIMIZE NITROGEN OXIDE
EMISSIONS. THE APPROACH ADOPTED INVOLVED THE
DEVELOPMENT OF A MATHEMATICAL MODEL OF NOX EMISSION
FROM AIRCRAFT ENGINE COMBUSTORS; A PARAMETRIC
ANALYSIS, USING THE MODEL, TO DETERMINE THE
SENSITIVITY OF NOX EMISSIONS TO VARIATIONS OF MODEL
PARAMETERS AND ENGINE DESIGN VARIABLES; EVALUATION OF
CRITICAL MODEL PARAMETERS BY MEANS OF EXPERIMENTAL
MEASUREMENTS; AND THE INCORPORATION OF THE MODEL INTO
COMBUSTOR DESIGN METHODS TO PROVIDE GUIDELINES FOR
MINIMIZING NOX EMISSION WHILE MAINTAINING OTHER
PERFORMANCE AND EMISSION CHARACTERISTICS. THE
REPORT DESCRIBES THE NITRIC OXIDE FORMATION PROCESS
AND A COMPUTER PROGRAM (NOXRAT) FOR CALCULATING
THERMODYNAMIC DATA. THE PROGRAM IS BASED UPON A
SIX-REACTION MODEL OF NO FORMATION. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 741 570 21/2 21/5 13/2
NORTHERN RESEARCH AND ENGINEERING CORP CAMBRIDGE MASS

THE CONTROL OF OXIDES OF NITROGEN EMISSIONS
FROM AIRCRAFT GAS TURBINE ENGINES. VOLUME
3. THE FLOW MODEL.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 70-DEC 71,
DEC 71 173P FLETCHER, RONALD S. ; SIEGEL,
RICHARD D. ;
REPT. NO. NREC-1162-3
CONTRACT: DOT-FA70WA-2428
MONITOR: FAA-RD 71-111-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-741 506.

DESCRIPTORS: (*AIRCRAFT ENGINES, EXHAUST GASES), (*AIR
POLLUTION, EXHAUST GASES), (*GAS TURBINES, *EXHAUST
GASES), (*NITROGEN OXIDES, *COMBUSTION), REACTION
KINETICS, COMBUSTION CHAMBERS, DESIGN, GAS FLOW,
COMPUTER PROGRAMS, MATHEMATICAL MODELS (U)
IDENTIFIERS: NITROGEN OXIDE(NO), *AIR POLLUTION,
*CONTROL, *AIRCRAFT EXHAUST (U)

THE OBJECTIVE OF THE STUDY WAS TO DEVELOP CRITERIA
FOR USE IN THE DESIGN OF AIRCRAFT GAS TURBINE
COMBUSTION CHAMBERS TO MINIMIZE NITROGEN OXIDE
EMISSIONS. THE APPROACH ADOPTED INVOLVED THE
DEVELOPMENT OF A MATHEMATICAL MODEL OF NOX EMISSION
FROM AIRCRAFT ENGINE COMBUSTORS; A PARAMETRIC
ANALYSIS, USING THE MODEL, TO DETERMINE THE
SENSITIVITY OF NOX EMISSIONS TO VARIATIONS OF MODEL
PARAMETERS AND ENGINE DESIGN VARIABLES; EVALUATION OF
CRITICAL MODEL PARAMETERS BY MEANS OF EXPERIMENTAL
MEASUREMENTS; AND THE INCORPORATION OF THE MODEL INTO
COMBUSTOR DESIGN METHODS TO PROVIDE GUIDELINES FOR
MINIMIZING NOX EMISSION WHILE MAINTAINING OTHER
PERFORMANCE AND EMISSION CHARACTERISTICS. THE
REPORT DESCRIBES COMBUSTION AND FLOW PROCESSES IN GAS
TURBINE COMBUSTORS AND A COMPUTER PROGRAM (GASNOX)
FOR CALCULATING GAS PROPERTIES AND NO
CONCENTRATIONS THROUGHOUT A COMBUSTOR. THIS
PROGRAM IS BASED UPON A THREE-ZONE, HETEROGENEOUS
MODEL OF GAS TURBINE COMBUSTOR OPERATION. PROGRAM
GASNOX IS USED WITH INPUT DATA FROM PROGRAM
NOXRAT TO CALCULATE NO EMISSION RATES.
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 742 624 13/2 20/5
MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

THE USE OF LASERS IN POLLUTION
MONITORING.

(U)

DESCRIPTIVE NOTE: JOURNAL ARTICLE,
NOV 71 12P MELNGAILIS, IVARS ;
REPT. NO: JA-3984
CONTRACT: F19628-70-C-0230
MONITOR: ESD TR-72-100

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN IEEE TRANSACTIONS ON
GEOSCIENCE ELECTRONICS, VGE-10 N1 P7-17 JAN 72.
SUPPLEMENTARY NOTE: PRESENTED AT THE IEEE GEOSCIENCE
ELECTRONICS SYMPOSIUM, HELD AT WASHINGTON, D.C.,
ON 25-27 AUG 71. REVISION OF REPORT DATED 20 SEP 71.

DESCRIPTORS: (*AIR POLLUTION, GAS DETECTORS), (*GAS
DETECTORS, *LASERS), REVIEWS, RAMAN SPECTROSCOPY,
ABSORPTION SPECTRA, FLUORESCENCE, RESONANCE ABSORPTION,
DEMODULATION, SULFUR COMPOUNDS, CARBON MONOXIDE (U)
IDENTIFIERS: LASER SPECTROSCOPY, LIGHT SCATTERING,
ORGANIC DYE LASERS, *AIR POLLUTION DETECTION, REMOTE
SENSING, RESONANCE FLUORESCENCE, SEMICONDUCTOR LASERS,
SULFUR DIOXIDE, TUNABLE LASER, JOINT PANEL
AMMUNITION DISPOSAL, JPAD(JOINT PANEL
AMMUNITION DISPOSAL) (U)

OPTICAL TECHNIQUES HAVE OPENED UP NEW POSSIBILITIES
IN AIR POLLUTION MONITORING BECAUSE OF THEIR REMOTE-
SENSING CAPABILITY, VERY HIGH SPECIFICITY, AND
SHORT OBSERVATION TIME. TECHNIQUES INVOLVING THE
USE OF LASERS INCLUDE RAMAN SCATTERING, EMISSION
EITHER FROM RESONANTLY EXCITED OR FROM HOT GASES, AND
RESONANT ABSORPTION AND ARE DISCUSSED. UNIQUE
ADVANTAGES IN THESE APPLICATIONS ARE PROVIDED BY THE
RECENTLY DEVELOPED TUNABLE LASERS, INCLUDING ORGANIC
DYE LASERS, PARAMETRIC OSCILLATORS, SPIN-FLIP RAMAN
LASERS, AND SEMICONDUCTOR LASERS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 744 048 13/2 21/5
ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE
STATION TENN

MEASUREMENT OF POLLUTANT EMISSIONS FROM AN
AFTERBURNING TURBOJET ENGINE AT GROUND
LEVEL. PART I. PARTICULATE
EMISSIONS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 23 MAR-13 MAY 71,
JUN 72 56P GEARHART, J. W. ;BENEK, J.

A. ;

REPT. NO. AFDC-TR-72-64
CONTRACT: F40600-72-C-0003
PROJ: AF-3066, ARO-RW-5139

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH ARO,
INC., TULLAHOMA, TENN., REPT. NO. ARO-ETF-TR-
72-29.

DESCRIPTORS: (*TURBOJET ENGINES, EXHAUST GASES),
(*EXHAUST GASES, *AFTERBURNERS), (*AIR POLLUTION,
EXHAUST GASES), PARTICLES, AIRCRAFT ENGINES, TURBOJET
ENGINES, MEASUREMENT, GAS ANALYSIS (U)
IDENTIFIERS: *AIRCRAFT EXHAUST, SMOKE NUMBER, J-85-GE-
5 ENGINES, J-85 ENGINES (U)

SMOKE EMISSIONS WERE MEASURED IN GENERAL ACCORDANCE
WITH THE METHODS SPECIFIED IN THE SOCIETY OF
AUTOMOTIVE ENGINEERS AEROSPACE RECOMMENDED
PRACTICE 1179. MEASUREMENTS WERE MADE FROM 1 IN.
TO 32 FT AFT OF THE NOZZLE EXIT ALONG THE ENGINE
CENTERLINE, AND BOTH HORIZONTALLY AND VERTICALLY
ACROSS THE EXHAUST PLUME. THE J85-GE-5
TURBOJET ENGINE WAS OPERATED OVER A POWER RANGE FROM
IDLE TO MAXIMUM AFTERBURNING. THE EFFECTS OF INLET
TEMPERATURE AND HUMIDITY ON SMOKE PRODUCTION WERE
DETERMINED, AND TRENDS OF SMOKE PRODUCTION VERSUS
POWER SETTING WERE ESTABLISHED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 744 121 13/2
TECHNOLOGY SERVICE CORP SANTA MONICA CALIF

MULTI-OBJECTIVE EVALUATION OF A TRAFFIC
RESTRICTION POLICY FOR AIR POLLUTION
EPISODE CONTROL.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
NOV 71 57P COLLINS, D. C. ; MEISEL, W.
S. ; TEENER, M. D. ;
REPT. NO. TSC-030
CONTRACT: F44620-71-C-0093
PROJ: AF-9749
MONITOR: AFOSR TR-72-1218

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, *TRANSPORTATION),
OPTIMIZATION, LAW, COSTS, MATHEMATICAL MODELS, EXHAUST
GASES (U)
IDENTIFIERS: *ABATEMENT, *AIR POLLUTION, BENEFIT COST
ANALYSIS, HIGHWAY TRANSPORTATION, STRATEGY, *VEHICULAR
TRAFFIC CONTROL (U)

THE OBJECTIVE OF THE WORK IS TWOFOLD: THE
TESTING IN A PRACTICAL CONTEXT OF TECHNIQUES FOR
OPTIMIZING A COMPLEX SYSTEM WITH RESPECT TO MULTIPLE
CRITERIA; AND EVALUATION OF A STRATEGY FOR REDUCING
AIR POLLUTION THROUGH CONTROLS ON FREEWAY TRAFFIC.
THE CONTROL STRATEGY ENCOURAGES MULTIPLE RIDERS BY
PENALIZING ONE-PERSON VEHICLES DURING CERTAIN PEAK
TRAFFIC HOURS. THE LENGTH OF THE PENALTY PERIOD IS
A FUNCTION OF THE POLLUTANT LEVEL THE PREVIOUS DAY;
IT IS THIS FUNCTION WHICH IS TO BE SPECIFIED. THE
COST FUNCTIONS ARE THE AVERAGE LEVEL OF POLLUTANTS
OVER A ONE-WEEK PERIOD, AND THE TOTAL NUMBER OF
PENALTY HOURS DURING THE WEEK (THE INCONVENIENCE
AND ENFORCEMENT COST). (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 745 877 14/2 21/5
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

PRODUCTION TEST FACILITIES FOR TURBOJET AND
TURBOFAN ENGINES - 1975 TO 1995,

(U)

MAY 72 83P BAILEY, DAVID L. ; TOWER,
PHILIP W. ;
REPT. NO. NPS-57BA72061A

UNCLASSIFIED REPORT

DESCRIPTORS: (*TURBOJET ENGINES, *TEST FACILITIES),
TURBOFAN ENGINES, TEST EQUIPMENT, DESIGN, THRUST, JET
ENGINE INLETS, JET ENGINE NOISE, EXHAUST SYSTEMS,
AERODYNAMIC CHARACTERISTICS, INSTRUMENTATION, CONTROL
SYSTEMS, AIR POLLUTION, DATA PROCESSING (U)

A REVIEW IS MADE OF TEST CELL DESIGN OPTIONS IN
ORDER TO IDENTIFY CHARACTERISTICS OF JET ENGINE TEST
FACILITIES TO BE CONSTRUCTED IN THE 1970'S AND
DESIGNED TO BE OPERABLE FOR A MINIMUM OF TWENTY
YEARS. THE NECESSITY OF PROVIDING REPLACEMENTS FOR
MANY CURRENT FACILITIES IS DOCUMENTED, AND THE
FACTORS WHICH WILL ENSURE FUTURE PRODUCTION
CAPABILITY AND ECONOMIC FEASIBILITY ARE DETAILED.
PRESENT TURBINE ENGINES ARE REVIEWED AND
PROJECTIONS OF FUTURE ENGINES AND AIRCRAFT ARE MADE.
A CONFIDENTIAL SUPPLEMENT IS AVAILABLE FOR
QUALIFIED RECIPIENTS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 746 280 13/2 17/8 17/5
TORONTO UNIV (ONTARIO) INST FOR AEROSPACE STUDIES

A COMPARATIVE STUDY OF LASER METHODS OF
AIR POLLUTION MAPPING, (U)

DEC 71 44P MEASURES, R. M. ;
REPT. NO. UTIAS-174

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, *OPTICAL RADAR), (*GAS
DETECTORS, OPTICAL RADAR), (*NITROGEN OXIDES, GAS
DETECTORS), GAS LASERS, SCATTERING, FLUORESCENCE,
EXCITATION, BACKSCATTERING, RAMAN SPECTROSCOPY, MAPPING,
ABSORPTION, MONITORS, RELAXATION TIME,
CONCENTRATION(CHEMISTRY), MATHEMATICAL ANALYSIS,
CANADA (U)

IDENTIFIERS: LASER INDUCED FLUORESCENCE, NITROGEN
OXIDE(N₂O), OPTICAL RADAR, *AIR POLLUTION DETECTION,
PLUMES, LIGHT SCATTERING, RAMAN SPECTRA, TRACE
ELEMENTS (U)

A COMPARATIVE STUDY HAS BEEN MADE OF THREE LASER
METHODS OF REMOTELY MAPPING GASEOUS POLLUTANTS OF THE
ATMOSPHERE. IT HAS BEEN FOUND THAT, IN THE CASE OF
NO₂ AND SO₂, DIFFERENTIAL ABSORPTION AND
SCATTERING HAS SUPERIOR PERFORMANCE POTENTIAL WITH
REGARD TO RANGE AND SENSITIVITY THAN EITHER LASER-
INDUCED FLUORESCENCE OR RAMAN BACKSCATTERING.
HOWEVER, BECAUSE OF THE SOPHISTICATION OF THIS
SYSTEM AND THE DIFFICULTY OF INTERPRETATION, IT IS
STRONGLY RECOMMENDED THAT FROM THE LONG TERM POINT OF
VIEW THE FLUORESCENCE APPROACH BE PURSUED FURTHER AS
IT HAS A RANGE AND SENSITIVITY FAR SUPERIOR TO
RAMAN BACKSCATTERING FOR A GIVEN LASER POWER. AN
ANALYSIS OF THE FLUORESCENCE RETURN EXPECTED FROM A
LOCAL SOURCE OF NO₂ INDICATES THAT A PLUME OF ABOUT
10 PPM COULD BE DETECTED AT A RANGE OF SEVERAL
KILOMETERS. HOWEVER, DUE TO ABSORPTION EFFECTS,
CARE MUST BE USED IN THE INTERPRETATION OF SIGNALS
EMANATING FROM LOCAL CONCENTRATIONS IN EXCESS OF
ABOUT 10 PPM. (AUTHOR) (U)

UNCLASSIFIED

000M1

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 746 660 6/20
SYSTEMED CORP DAYTON OHIO

PROCEEDINGS OF THE ANNUAL CONFERENCE ON
ENVIRONMENTAL TOXICOLOGY (2ND) HELD AT
FAIRBORN, OHIO ON 31 AUGUST, 1 AND 2
SEPTEMBER 1971. (U)

DEC 71 316P
CONTRACT: F33615-70-C-1046
PROJ: AF-6302
MONITOR: AMRL TR-71-120

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-727 022.

DESCRIPTORS: (*TOXICITY, *SYMPOSIA), (*HALOGENATED
HYDROCARBONS, TOXICITY), (*AIR POLLUTION, TOXICITY),
(*PROPELLANTS, TOXICITY), EXPOSURE(PHYSIOLOGY),
PATHOLOGY, ELECTRON MICROSCOPY, GAS CHROMATOGRAPHY (U)

MAJOR TECHNICAL AREAS DISCUSSED INCLUDED
TOXICOLOGICAL EVALUATION OF VOLATILE HALOGENATED
COMPOUNDS, PROTECTION OF THE PUBLIC AGAINST AIR
POLLUTION AND TOXICOLOGICAL PROBLEMS WITH AIRCRAFT,
MISSILES, AND SPACE VEHICLES, (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 751 898 13/2

ENVIRONMENTAL HEALTH LAB MCCLELLAN AFB CALIF

TECHNICAL REPORT BIBLIOGRAPHY.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

AUG 72 147P HOFFNAGLE, GALE F. ;
REPT. NO. EHL-M-72M-14

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, AIR FORCE RESEARCH),
(*WATER POLLUTION, AIR FORCE RESEARCH), (*INDUSTRIAL
MEDICINE, AIR FORCE RESEARCH), (*RADIATION HAZARDS, AIR
FORCE RESEARCH), CHEMICAL ANALYSIS, MICROWAVES, LASERS,
ENTOMOLOGY, CALIFORNIA (U)

IDENTIFIERS: MCCLELLAN AIR FORCE BASE, *NOISE
POLLUTION, ELECTROMAGNETIC RADIATION HAZARDS (U)

A BIBLIOGRAPHY OF ALL UNCLASSIFIED TECHNICAL
REPORTS PREPARED BY USAF ENVIRONMENTAL HEALTH
LABORATORY MCCLELLAN IS PRESENTED. IT
CONTAINS A LISTING BY SUBJECT MATTER AND A LISTING OF
ALL REPORTS BY YEAR WITH REPORT NUMBER AND ABSTRACT.
THE REPORTS COVER MOST AREAS OF ENVIRONMENTAL
TOPICS SUCH AS AIR, WATER, NOISE, AND RADIATION
POLLUTION. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 752 319 7/2 13/2
CALIFORNIA UNIV SAN DIEGO LA JOLLA DEPT OF PHYSICS

RARE-EARTH OXIDES OF MANGANESE AND COBALT
RIVAL PLATINUM FOR THE TREATMENT OF CARBON
MONOXIDE IN AUTO EXHAUST, (U)

MAY 72 5P VOORHOEVE, R. J. H. ;
REMEIKA, J. P. ; FREELAND, P. E. ; MATTHIAS, B.
T. ;

CONTRACT: F44620-72-C-0017

PROJ: AF-9764

TASK: 976402

MONITOR: AFOSR TR-72-2219

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN SCIENCE, V177 P353-354, 28
JUL 72.

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH BELL
TELEPHONE LABS., MURRAY HILL, N. J.

DESCRIPTORS: (*EXHAUST GASES, OXIDATION), (*CARBON
MONOXIDE, *OXIDATION), (*RARE EARTH COMPOUNDS,
*CATALYSTS), AIR POLLUTION, OXIDES, SINGLE CRYSTALS,
LANTHANUM COMPOUNDS, PRASEODYMIUM COMPOUNDS, NEODYMIUM
COMPOUNDS (U)

IDENTIFIERS: *AIR POLLUTION, *CONTROL, AUTOMOBILE
EXHAUST, *CATALYTIC REACTORS (EXHAUST SYSTEMS) (U)

THE PEROVSKITE-LIKE COMPOUNDS $RE(1-x)PB(x)MnO_3$ AND $RECOO_3$, WHERE RE (RARE
EARTH) IS LANTHANUM, PRASEODYMIUM, OR NEODYMIUM,
ARE ACTIVE CATALYSTS FOR THE OXIDATION OF CARBON
MONOXIDE. CRUSHED SINGLE CRYSTALS OF THESE
COMPOUNDS COMPARE FAVORABLY WITH COMMERCIAL PLATINUM
CATALYSTS IN INITIAL ACTIVITY AND LIFETIME.
THEREFORE, THESE COMPOUNDS ARE PROMISING
SUBSTITUTES FOR PLATINUM IN DEVICES FOR THE CATALYTIC
TREATMENT OF AUTO EXHAUST. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 752 534 6/10
ENVIRONMENTAL HEALTH LAB MCCLELLAN AFB CALIF

AIR POLLUTION AND INDUSTRIAL HYGIENE
EVALUATION OF MAINTENANCE SHOPS, TINKER
AFB, OKLAHOMA. PART I. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
OCT 71 67P BURNETT, RONALD D. ;
REPT. NO. EHL-M-71M-21
PROJ: EHL-OAF-113

UNCLASSIFIED REPORT

DESCRIPTORS: (*INDUSTRIAL MEDICINE, MILITARY
FACILITIES), (*AIR POLLUTION, *MILITARY FACILITIES),
VENTILATION, JET ENGINES, MAINTENANCE,
EXPOSURE(PHYSIOLOGY), ORGANIC SOLVENTS, HALOGENATED
HYDROCARBONS, ETHYLENES, METALS, GAS ANALYSIS,
PARTICLES, CLEANING, WELDING, AIR FORCE, OKLAHOMA (U)
IDENTIFIERS: INDOOR AIR POLLUTION, TINKER AIR FORCE
BASE, ETHYLENE/TRICHLORO (U)

THE OKLAHOMA CITY AIR MATERIAL AREA
(OCAMA), TINKER AFB HAS THE MAINTENANCE
RESPONSIBILITY FOR THE J-57, J-75, TF-33, J-
79, TF-41, AND TF-30 JET ENGINES. ALL OF THE
MAJOR INDUSTRIAL PROCESSES ASSOCIATED WITH OVERHAUL
OF THESE ENGINES ARE LOCATED IN A LARGE AIR
CONDITIONED BUILDING. THE PRIMARY OBJECTIVES OF
THE STUDY WERE THE EVALUATION OF POTENTIAL EXPOSURES
TO WORKERS TO AIRBORNE CONTAMINANTS (INDUSTRIAL
HYGIENE EVALUATIONS), GENERAL OR AMBIENT
CONCENTRATIONS OF AIRBORNE CONTAMINANTS, AIR
POLLUTION POTENTIAL OF PROCESS EXHAUST EMISSIONS,
AND POSSIBLE CROSS CONTAMINATION BETWEEN PROCESS
OUTLETS AND FRESH AIR INTAKES RESULTING FROM THE
MAJOR INDUSTRIAL OPERATIONS LOCATED IN THE NORTH END
OF THE BUILDING. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 752 578 21/7 13/6
DETROIT UNIV MICH

PISTON ENGINE COMBUSTION PARAMETERS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

MAY 72 39P HAMAN, ARTHUR C. ;

CONTRACT: DAAE07-68-C-2990

MONITOR: TACOM 11661

UNCLASSIFIED REPORT

DESCRIPTORS: (*INTERNAL COMBUSTION ENGINES,
*COMBUSTION), (*EXHAUST GASES, INTERNAL COMBUSTION
ENGINES), (*AIR POLLUTION, EXHAUST GASES), SPARK
IGNITION ENGINES, CARGO VEHICLES, VOLUME, FEASIBILITY
STUDIES, FUEL CONSUMPTION, PARTICLES, NITROGEN OXIDES,
IGNITION (U)
IDENTIFIERS: M-151 TRUCKS(1/4-TON), *VARIABLE
COMPRESSION RATIO (U)

AN INVESTIGATION WAS MADE INTO THE TECHNICAL
FEASIBILITY OF THE APPLICATION OF THE VARIABLE
COMPRESSION RATIO CONCEPT TO THE M-151 1/4 TON
UTILITY TRUCK ENGINE AND TO DETERMINE THE EFFECT OF
VARIOUS ENGINE PARAMETERS ON PARTICULATE EMISSIONS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 752 581 21/4 13/2 21/5
ESSO RESEARCH AND ENGINEERING CO LINDEN N J GOVERNMENT
RESEARCH LAB

FUEL MODIFICATION FOR ABATEMENT OF AIRCRAFT
TURBINE ENGINE OXIDES OF NITROGEN
EMISSIONS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 26 APR 71-31 MAY 72,
OCT 72 129P SHAW, HENRY ;
REPT. NO. GRU.1GDJA.72
CONTRACT: F33615-71-C-1575
PROJ: AF-3066
TASK: 306605
MONITOR: AFAPL TR-72-80

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIRCRAFT ENGINES, *EXHAUST GASES),
(*NITROGEN OXIDES, AIRCRAFT ENGINES), (*AIR POLLUTION,
NITROGEN OXIDES), (*FUEL ADDITIVES, *JET ENGINE FUELS),
CHELATE COMPOUNDS, COBALT COMPOUNDS, IRON COMPOUNDS,
MAGNESIUM COMPOUNDS, COPPER COMPOUNDS, MATHEMATICAL
MODELS, COMBUSTION, CONCENTRATION(CHEMISTRY), NUMERICAL
ANALYSIS, COLLOIDS, GAS TURBINES, GAS ANALYSIS (U)
IDENTIFIERS: ACETYLACETONATE COMPLEXES, *AIR
POLLUTION, *CONTROL, COMPUTER AIDED ANALYSIS, FORTRAN,
FORTRAN 4 PROGRAMMING LANGUAGE (U)

THE REPORT DESCRIBES A BROAD EXPERIMENTAL PROGRAM
THAT WAS UNDERTAKEN TO ASSESS THE FEASIBILITY OF
REDUCING NO(X) FROM AIRCRAFT GAS TURBINE ENGINES
BY FUEL MODIFICATION. THE ESSO HIGH PRESSURE
CANNULAR COMBUSTOR WAS USED TO SIMULATE THE
CHARACTERISTIC EMISSIONS OF GAS TURBINES AT FULL
POWER OPERATION. OVER 70 FUEL MODIFICATIONS WERE
TESTED USING JET A AS THE BASE FUEL. SOLUBLE
COMPOUNDS OF COBALT, IRON, MAGNESIUM, AND COPPER
REDUCE NO(X) BY AS MUCH AS 30% WHEN ADDED TO
THE FUEL AT A TREAT RATE OF UP TO 0.5% (W).
NONE OF THE INVESTIGATED ADDITIVES WERE FULLY
ACCEPTABLE BECAUSE OF THE RELATIVELY LOW NO(X)
REDUCTION THAT WAS OBTAINED EVEN WITH HIGH ADDITIVE
TREAT RATES. A SIMPLE EXPRESSION WAS DERIVED WHICH
IS USEFUL IN ESTIMATING NO LEVELS IN GAS TURBINE
COMBUSTORS WHEN EQUILIBRIUM NO(X) CONCENTRATIONS
AND TEMPERATURE ARE KNOWN. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 753 095 13/2 21/5 21/7
AIR FORCE AERO PROPULSION LAB WRIGHT-PATTERSON AFB
OHIO

ASSESSMENT OF POLLUTANT MEASUREMENT AND
CONTROL GOALS FOR MILITARY AIRCRAFT
ENGINES.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
NOV 72 71P BLAZOWSKI, WILLIAM S. ;
HENDERSON, ROBERT E. ;
REPT. NO. AFAPL-TR-72-102
PROJ: AF-3048, AF-3066
TASK: 304805, 306605

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, EXHAUST GASES), (*AIRCRAFT
ENGINES, *EXHAUST GASES), REVIEWS, AIR FORCE,
SPECIFICATIONS, STANDARDS, GAS ANALYSIS, SPARK IGNITION
ENGINES, JET ENGINES, AFTERBURNERS, PARTICLES, CARBON
MONOXIDE, HYDROCARBONS, NITROGEN OXIDES,
PERFORMANCE (ENGINEERING), MILITARY REQUIREMENTS (U)
IDENTIFIERS: AIR POLLUTION STANDARDS, *AIRCRAFT
EXHAUST, SMOKE, JET ENGINE EXHAUST (U)

THE PROBLEM OF MASS EMISSIONS FROM AIRCRAFT GAS
TURBINE ENGINES IS BRIEFLY REVIEWED AND THE ASPECTS
OF THIS PROBLEM WHICH ARE UNIQUE TO MILITARY AIRCRAFT
OPERATION ARE DISCUSSED. POLLUTANT MEASUREMENT
TECHNOLOGY AND THE EXISTING DATA BASE ARE SUMMARIZED
AND CANDIDATE CONTROL TECHNIQUES ARE IDENTIFIED.
PROPOSED ENVIRONMENTAL PROTECTION AGENCY
REGULATIONS FOR AIRCRAFT ENGINE EMISSIONS ARE
EXAMINED IN TERMS OF THEIR IMPACT ON AND APPLICATION
TO MILITARY ENGINES. IT IS CONCLUDED THAT THE
SPECIAL CONSIDERATIONS, BOTH PERFORMANCE AND
OTHERWISE, WHICH MUST BE AFFORDED TO MILITARY
AIRCRAFT PROHIBIT DIRECT APPLICATION OF THE EPA
REGULATIONS. THE REPORT CONCERNS AIR FORCE
EMISSION LIMITATION GOALS ESTABLISHED IN LIGHT OF
THESE EFFORTS. MAXIMUM ALLOWABLE IDLE COMBUSTION
INEFFICIENCY, OXIDE OF NITROGEN EMISSION (1BM/1000
LBM FUEL), AND SMOKE NUMBER ARE SPECIFIED. THE
RATIONALE BEHIND USING THESE PARAMETERS, AND THE
MEANS BY WHICH THE NUMERICAL GOALS WERE DERIVED ARE
DISCUSSED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-754 008 13/2

GRUMMAN AEROSPACE CORP BETHPAGE N Y RESEARCH DEPT

THE GRUMMAN AIR MONITOR SYSTEM.

(U)

DESCRIPTIVE NOTE: RESEARCH REPT.,
NOV 72 28P FOREMAN, K. M. ;
REPT. NO. RM-559

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, SAMPLING), SAMPLERS, GAS
ANALYSIS, MONITORS, COLLECTING METHODS, BAGS (U)

AN AUTOMATED AIR SAMPLING SYSTEM HAS BEEN DEVELOPED THAT CAN BE USED IN ANY TRANSPORTATION VEHICLE TO MONITOR LOCAL AIR QUALITY. THIS SYSTEM IS PARTICULARLY USEFUL FOR A CONCEPT TO OBTAIN WORLDWIDE PROFILES OF AIR QUALITY, FOR EXAMPLE, USING COMMERCIAL AIRLINERS. THE SYSTEM CONSISTS OF A CONTROLLER MODULE AND MODULAR COLLECTION AND STORAGE UNITS, EACH CONTAINING FIVE 5-LITER INFLATABLE BAGS. AUTOMATIC INFLATION OF ANY ONE ALUMINUM-COATED MYLAR OR TEFLON BAG OF AN INSTALLED SYSTEM CAN BE PROGRAMMED FOR ANY PORTION OF A 24-HOUR PERIOD. OPERATIONAL CHARACTERISTICS OF THE EQUIPMENT AND THE TECHNIQUE ARE GIVEN TO SHOW ITS SUITABILITY FOR THE PROPOSED APPLICATIONS. THE REPORT BRIEFLY DESCRIBES THE OPERATION OF THIS SYSTEM.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 754 918 4/1 13/2 7/4
LOCKHEED MISSILES AND SPACE CO PALO ALTO CALIF PALO ALTO
RESEARCH LAB

STUDY OF HIGH-ALTITUDE AIRCRAFT WAKE
DYNAMICS. TASK I. PROBLEM DEFINITION. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
DEC 72 208P HOSHIZAKI, H. ; CONTI, R. J.
; ANDERSON, L. B. ; REDLER, K. O. ; MEYER, J.
W. ;

CONTRACT: DOT-OS-20082
MONITOR: DOT-TST 90-3

UNCLASSIFIED REPORT

DESCRIPTORS: (*EXHAUST GASES, *STRATOSPHERE),
(*CONDENSATION TRAILS, REACTION KINETICS), (*JET
AIRCRAFT, CONDENSATION TRAILS), OZONE, WAKE, VORTICES,
SUPERSONIC AIRCRAFT, NITROGEN OXIDES, CARBON MONOXIDE,
HYDROCARBONS, TURBULENCE, ALDEHYDES, PHOTOCHEMICAL
REACTIONS, THERMOCHEMISTRY, ATMOSPHERE MODELS, AIR
POLLUTION, SULFUR COMPOUNDS, FREE RADICALS, DIFFUSION,
FLUID MECHANICS (U)
IDENTIFIERS: AERONOMY, ATMOSPHERIC DENSITY,
DIFFUSION (U)

THE PURPOSE OF THE HIGH-ALTITUDE AIRCRAFT
WAKE DYNAMICS STUDY HAS BEEN TO INVESTIGATE THE
CHEMICALLY REACTING WAKE OF AN AIRCRAFT FLYING AT
SUBSONIC AND SUPERSONIC VELOCITY IN THE UPPER
TROPOSPHERE AND STRATOSPHERE. THIS IS OF INTEREST
BECAUSE OF THE EFFECTS THESE EXHAUST GASES COULD HAVE
UPON THE CHEMICAL BALANCE IN THE STRATOSPHERE. IN
THE STUDY, THE CHEMICAL AND FLUID MECHANICAL
BEHAVIORS OF IMPORTANT EMISSION SPECIES WERE TRACED
FROM THE TIME THE SPECIES EXITED THE ENGINE EXHAUST
NOZZLE TO THE TIME AIRCRAFT-INDUCED PERTURBATIONS TO
THE ATMOSPHERIC ENVIRONMENT WERE NO LONGER IMPORTANT.
THE IMPORTANT FEATURES OF CHEMICALLY REACTING
AIRCRAFT WAKES HAVE BEEN IDENTIFIED. THE AIRCRAFT
WAKE IS MODELED IN TERMS OF THE JET REGIME (WAKE
AGE APPROXIMATELY 10 SEC) VORTEX REGIME
(APPROXIMATELY 100 SEC) AND THE WAKE DISPERSION
REGIME (APPROXIMATELY 100 SEC). THE IMPORTANT
THERMOCHEMICAL REACTIONS WERE FOUND TO TAKE PLACE IN
THE JET REGIME. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 754 936 6/20 6/1
MONSANTO RESEARCH CORP DAYTON OHIO DAYTON LAB

RESEARCH PROGRAM ON BERYLLIUM OXIDE
ANALYSIS AND TOXICITY.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. JUN 71-JUN 72,
SEP 72 49P SCRIBNER, WILLIAM G. ;
CTVRTNICEK, THOMAS ; FRAME, GEORGE M. ; FORD,
RODDEY E. ;

REPT. NO. MRC-DA-340
CONTRACT: F33615-71-C-1794
PROJ: AF-6302
TASK: 630203
MONITOR: AMRL TR-72-72

UNCLASSIFIED REPORT

DESCRIPTORS: (*TOXICITY, BERYLLIUM OXIDES), (*BERYLLIUM
OXIDES, BLOOD ANALYSIS), TISSUES(BIOLOGY), CHEMICAL
ANALYSIS, GAS CHROMATOGRAPHY, CANCER, AIR POLLUTION,
EXHAUST GASES, PUBLIC HEALTH, INDUSTRIAL MEDICINE, BLOOD
CHEMISTRY, CHELATE COMPOUNDS, HALOGENATED
HYDROCARBONS (U)
IDENTIFIERS: CARCINOGENS (U)

THE CARCINOGENIC ACTIVITY OF BEO HAS BEEN SHOWN
TO BE A FUNCTION OF THE TEMPERATURE TO WHICH THE
BERYLLIUM HAS BEEN EXPOSED. EXAMINATION OF THE
TOXICOLOGICAL PROPERTIES OF VARIOUS ROCKET EXHAUST
PRODUCTS INDICATE THAT SOME PRODUCTS RESEMBLE HIGH-
FIRED BEO IN THEIR LACK OF CARCINOGENIC ACTIVITY,
WHILE OTHERS CONTAIN CONSIDERABLE QUANTITIES OF WATER
SOLUBLE BERYLLIUM AND VARY IN TOXICITY. IN
ANALYZING BLOOD SAMPLES IT IS NECESSARY TO OBTAIN THE
TOTAL BE CONCENTRATION ALTHOUGH AS MENTIONED SOME
FORMS ARE NOT AS REACTIVE AS OTHERS. THUS THE
RESEARCH INVOLVED DEVISING REACTION CONDITIONS FOR
THE CONVERSION OF LOW-FIRED BEO AND HIGH-FIRED
BEO SUCH THAT THE REACTION MIXTURE WAS IN A FORM
SUITABLE FOR THE GAS CHROMATOGRAPHIC MEASUREMENT OF
BERYLLIUM. ALSO DISCUSSED IS THE APPLICABILITY OF
THE TECHNIQUE FOR THE CONVERSION OF THE OXIDES IN
BLOOD AND TISSUE MATRICES. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 755 151 21/4 13/2
NAVAL AIR ENGINEERING CENTER PHILADELPHIA PA GROUND SUPPORT
EQUIPMENT DEPT

GROUND SUPPORT EQUIPMENT: LOW POLLUTANT
FUELS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. SEP 71-AUG 72,
SEP 72 32P WEIKEL, THOMAS DALE ;
REPT. NO. NAEC-GSED-59
PROJ: A340-5344/200-B/2F00-55-4401

UNCLASSIFIED REPORT

DESCRIPTORS: (*GASOLINE, SUBSTITUTES), (*FUELS,
SUBSTITUTES), METHANE, HYDROGEN, GROUND SUPPORT
EQUIPMENT, AMMONIA, CARBINOLS, ETHANOLS, ALKYNES, STEAM,
EXTERNAL COMBUSTION ENGINES, INTERNAL COMBUSTION
ENGINES, REVIEWS, HYDROCARBONS (U)

IDENTIFIERS: WANKEL ENGINES, *LIQUEFIED NATURAL GAS,
METHANE/NITRO, ACETYLENE, *AIR POLLUTION, *CONTROL,
STEAM ENGINES (U)

ALTERNATE FUELS, WITH AN EMPHASIS ON LIQUEFIED
NATURAL GAS ARE BRIEFLY REVIEWED FOR FEASIBILITY OF
USE IN AIRCRAFT GROUND SUPPORT EQUIPMENT TO REDUCE
AIR POLLUTION. ELECTRICITY, STEAM, AND WANKEL
ENGINES WERE ALSO INVESTIGATED. IT WAS CONCLUDED
THAT THE MOST PRACTICAL SYSTEM IS THE USE OF
LIQUEFIED PETROLEUM GAS AND CATALYTIC CONVERTERS ON
PRESENT GASOLINE ENGINE SUPPORT EQUIPMENT.
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 755 358 6/20
SYSTEMED CORP DAYTON OHIO

TOXIC HAZARDS RESEARCH UNIT ANNUAL
TECHNICAL REPORT: 1972.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 71-MAY 72,
AUG 72 164P MACEWEN, J. D.; VERNOT, E.

H. ;

REPT. NO. W72003
CONTRACT: F33615-70-C-1046
PROJ: AF-6302
TASK: 630201
MONITOR: AMRL TR-72-62

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPORT DATED OCT 71, AD-
734 543.

DESCRIPTORS: (*TOXICITY, GASES), (*ORGANIC SOLVENTS,
TOXICITY), (*ROCKET PROPELLANTS, TOXICITY), (*CONFINED
ENVIRONMENTS, TOXICITY), RESPIRATION, HALOGENATED
HYDROCARBONS, CHLORINE COMPOUNDS, STANDARDS, SILANES,
BROMINE COMPOUNDS, CORROSIVE GASES, SULFIDES, CHLORINE,
AMMONIA, SPACECRAFT CABINS, METHYL HYDRAZINES, BROMINE
COMPOUNDS, URINE, ALUMINUM COMPOUNDS, AIR POLLUTION,
INGESTION (PHYSIOLOGY) (U)

IDENTIFIERS: METHANE/DICHLORO, AIR POLLUTION
EFFECTS (ANIMALS), ALUMINUM PHOSPHIDES, BROMINE
FLUORIDE (BRF5), CHLORINE PENTAFLUORIDE, CHEMISTRY,
CLINICAL MEDICINE, *HAZARDOUS MATERIALS, HYDROGEN
BROMIDE, HYDROGEN SULFIDE, HYDROGEN CHLORIDE, ETHYL
BROMIDE (U)

THE ACTIVITIES OF THE TOXIC HAZARDS RESEARCH
UNIT (THRU) FOR THE PERIOD OF JUNE 1971 THROUGH
MAY 1972 ARE REVIEWED IN THIS REPORT. ACUTE
INHALATION TOXICITY EXPERIMENTS WERE CONDUCTED ON
HYDROGEN CHLORIDE (HCL) GAS AND AEROSOL, ETHYL
BROMIDE (C2H5BR), HYDROGEN BROMIDE (HBR),
HYDROGEN SULFIDE (H2S), AMMONIA (NH3),
CHLORINE (CL2), AND SILANE (SIH4).
SUBACUTE TOXICITY STUDIES WERE CONDUCTED ON
CHLORINE PENTAFLUORIDE (CLF5), DICHLOROMETHANE
(CH2CL2) AND COAL TAR VOLATILES. FURTHER
TOXICITY STUDIES OF SUBACUTE AND CHRONIC RESPONSES TO
INHALED MONOMETHYLHYDRAZINE (MMH) ARE ALSO
DESCRIBED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 755-603 6/20

CALIFORNIA UNIV SANTA BARBARA INST OF ENVIRONMENTAL
STRESS

CARBON MONOXIDE AND HUMAN VIGILANCE. A
DELETERIOUS EFFECT OF PRESENT URBAN
CONCENTRATIONS,

(U)

MAY 71 6P HORVATH, STEVEN M. ; DAHMS,
THOMAS E. ; O'HANLON, JAMES F. ;
CONTRACT: AF-AFOSR-1653-69
PROJ: AF-9777
MONITOR: AFOSR TR-73-0177

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN ARCHIVES OF ENVIRONMENTAL
HEALTH, V23 P343-347 NOV 71.

SUPPLEMENTARY NOTE: REVISION OF REPORT DATED 9 APR
71.

DESCRIPTORS: (*CARBON MONOXIDE, ATTENTION), (*AIR
POLLUTION, CARBON MONOXIDE), (*TOXICITY, CARBON
MONOXIDE), RESPIRATION, PERFORMANCE(HUMAN), RESPIRATORY
SYSTEM, CARDIOVASCULAR SYSTEM, URBAN AREAS (U)

THE STUDY WAS CONDUCTED TO DETERMINE WHETHER CARBON
MONOXIDE GAS IS A FACTOR RESPONSIBLE FOR
DETERIORATION OF VIGILANCE IN MEN BREATHING POLLUTED
AIR. TEN SUBJECTS WERE EXPOSED FOR SLIGHTLY LONGER
THAN TWO HOURS, ON SEPARATE OCCASIONS, TO CO LEVELS
APPROXIMATING THE AVERAGE (26 PPM) AND PEAK
(111 PPM) LEVELS FOUND WHILE DRIVING IN URBAN
TRAFFIC. DURING THE LAST HOUR OF EACH EXPOSURE THE
SUBJECTS UNDERTOOK A STANDARD TEST OF VISUAL
VIGILANCE. THEY ALSO UNDERTOOK THE TEST WHILE
BREATHING AIR WITHOUT CO. BLOOD
CARBOXYHEMOGLOBIN LEVELS WERE MEASURED PRIOR TO
EXPOSURE, BEFORE AND AFTER THE TESTS. HEART RATES
AND MINUTE VENTILATORY VOLUMES WERE ALSO MEASURED.
THE RESULTS SHOWED THAT VIGILANCE WAS IMPAIRED BY
BREATHING 111 PPM CO WHICH RAISED THE AVERAGE
COHB LEVEL TO 6.6%. HEART RATES AND MINUTE
VENTILATORY VOLUMES WERE NOT AFFECTED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 757 059 4/1 13/2
INSTITUTE FOR DEFENSE ANALYSES ARLINGTON VA

ON THE PROBLEM OF ELIMINATING NITRIC OXIDE
FROM JET-ENGINE EXHAUST, (U)

AUG 72 7P CHAMBERLAIN, J. W. ;
REPT. NO. N-815
MONITOR: IDA/HQ 72-14447

UNCLASSIFIED REPORT

DESCRIPTORS: (*SUPERSONIC AIRCRAFT, *EXHAUST GASES),
(*AIR POLLUTION, EXHAUST GASES), (*STRATOSPHERE,
*OZONE), (*NITROGEN OXIDES, STRATOSPHERE), REACTION
KINETICS, EXCITATION, ATOMS, OXYGEN, PHOTOCHEMICAL
REACTIONS (U)
IDENTIFIERS: NITROGEN OXIDE(N2O), *NITROGEN OXIDE(NO),
ATOMS, OXYGEN, *AERONOMY (U)

THE REPORT DISCUSSES THE POSSIBILITY THAT NITRIC
OXIDE (NO) IN THE EXHAUST OF A FLEET OF SSTs
COULD SERIOUSLY AFFECT THE OZONE EQUILIBRIUM OF THE
STRATOSPHERE. IN THIS CONNECTION IT HAS BEEN
SUGGESTED THAT ARTIFICIAL EXCITATION (VIBRATIONAL
OR ELECTRONIC) OF NO IN THE COMBUSTION CHAMBER
COULD INCREASE ITS REACTION RATE SO THAT NO IS
CONVERTED INTO THE MORE INERT N2. THE MAXIMUM
RATE THAT COULD LIKELY BE THUS OBTAINED SEEMS
INADEQUATE TO DEplete THE NO ABUNDANCE APPRECIABLY.
HOWEVER, THERE ARE STILL UNCERTAINTIES IN THE
PARAMETERS AND THE MECHANISM CANNOT BE TOTALLY
DISCOUNTED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 757 859 13/2 14/2
ENVIRONMENTAL HEALTH LAB MCCLELLAN AFB CALIF

PRELIMINARY REPORT: JET ENGINE TEST
CELL EMISSIONS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,
DEC 70 26P BURNETT, RONALD D. ;
REPT. NO. EHL-M-70M-37
PROJ: EHL-M-E70-33

UNCLASSIFIED REPORT

DESCRIPTORS: (*EXHAUST GASES, *AIR POLLUTION),
(*TURBOJET ENGINES, CAPTIVE TESTS), AIRCRAFT ENGINES,
SAMPLERS, SAMPLING, CARBON MONOXIDE, CARBON DIOXIDE,
NITROGEN OXIDES, HYDROCARBONS, PARTICLES (U)
IDENTIFIERS: *JET ENGINE EXHAUST, J-57 ENGINES (U)

THE REPORT PRESENTS PUBLISHED JET ENGINE EMISSION
DATA, TEST CELL EMISSION DATA COLLECTED AT
MCCLELLAN AFB DURING THE OPERATION OF A J-57
TURBOJET ENGINE AT IDLE CONDITIONS AND DISCUSSES
PROBLEMS INVOLVED IN SAMPLING TEST CELL EMISSIONS.
IT WAS CONCLUDED THAT THE VARIABILITY OF EXISTING
DATA INDICATES A NEED FOR A MORE REFINED STUDY OF JET
ENGINE POLLUTANT EMISSION RATES. (AUTHOR
MODIFIED ABSTRACT) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-757 862 13/2

ENVIRONMENTAL HEALTH LAB MCCLELLAN AFB CALIF

NOISE AND AIR POLLUTION EMISSIONS FROM
NOISE SUPPRESSORS FOR ENGINE TEST STANDS AND
AIRCRAFT POWER CHECK PADS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,

JAN 72 138P BURNETT, RONALD D. ;

REPT. NO. EHL-M-71M-19

PROJ: EHL-M-AAF-127

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, *TURBOJET ENGINES), (*JET
ENGINE NOISE, TURBOJET ENGINES), SUPPRESSORS, CAPTIVE
TESTS, SAMPLING, TEST EQUIPMENT, CARBON DIOXIDE, CARBON
MONOXIDE, HYDROCARBONS, OXYGEN, NITROGEN OXIDES,
PARTICLES, EXHAUST GASES, GAS FLOW, VELOCITY,
ATMOSPHERIC PRECIPITATION, WIND, JET FIGHTERS, MILITARY
FACILITIES (U)

IDENTIFIERS: NOISE REDUCTION, NOISE REDUCTION,
ACOUSTIC MEASUREMENT, PLUMES, F-4 AIRCRAFT, F-4C
AIRCRAFT, F-111A AIRCRAFT, J-79-17 ENGINES, TF-30
ENGINES, *EMISSION (U)

THE REPORT PRESENTS IN DETAIL THE RESULTS OF THE
ENVIRONMENTAL POLLUTION STUDIES OF THE A/F 32A-
13, A/F 32A-14, AND A/F 32T-2 JET ENGINE
AND AIRCRAFT NOISE SUPPRESSORS. DETAILED
DESCRIPTIONS OF THE SAMPLING AND MEASUREMENT METHODS
USED DURING THESE STUDIES AS WELL AS REFINED JET
ENGINE EMISSIONS FACTORS, DESCRIPTIONS OF EXHAUST
PLUME FORMATION, AND DISCUSSIONS OF DOWNWIND RAINOUT
OF LIQUID DROPLETS FROM THE EXHAUST PLUME ARE
PRESENTED. THE NOISE DATA OBTAINED ARE ALSO
PRESENTED BUT UNLIKE THE AIR POLLUTION DATA WILL HAVE
LITTLE GENERAL APPLICATION. HOWEVER, THE NOISE
DATA WILL BE OF USE TO THOSE BASES ANTICIPATING OR
CURRENTLY USING THE NOISE SUPPRESSORS STUDIED. THE
REPORT ALSO PROVIDES DATA TO BE USED FOR DETERMINING
THE IMPACT OF ENGINE TESTING ON LOCAL AIR QUALITY. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 757 927 4/1
AIR FORCE CAMBRIDGE RESEARCH LABS L G HANSCOM FIELD
MASS

TRANSPORT MEASUREMENTS IN THE STRATOSPHERE,

(U)

JAN 73 16P ROSENBERG, NORMAN W. ; GOOD,
ROBERT E. ; SIMMERMAN, SAMUEL P. ;
REPT. NO. AFCRL-TR-73-0021

UNCLASSIFIED REPORT

AVAILABILITY: AVAILABLE IN MICROFICHE ONLY.
SUPPLEMENTARY NOTE: PRESENTED AT THE CONFERENCE ON THE
CLIMATIC IMPACT ASSESSMENT PROGRAM (2ND),
SPONSORED BY DEPARTMENT OF TRANSPORTATION, CAMBRIDGE,
MASS., 14-17 NOV 72.

DESCRIPTORS: (*STRATOSPHERE, TRANSPORT PROPERTIES),
ATMOSPHERIC MOTION, DIFFUSION, AIR POLLUTION, EXHAUST
GASES, JET TRANSPORT PLANES, WIND, OZONE, ATMOSPHERIC
TEMPERATURE (U)

IDENTIFIERS: WIND VELOCITY (U)

THE OBJECTIVE OF THE STUDY IS TO DETERMINE THE
ATMOSPHERIC TRANSPORT PROCESSES IN THE 15-30 KM
ALTITUDE REGION WHERE SST EMISSION PRODUCTS ARE
DEPOSITED. THE EXPERIMENTS ARE DESIGNED TO PROVIDE
SIMULTANEOUS MEASUREMENTS OF TEMPERATURE, WIND
VELOCITIES AND OZONE CONCENTRATION. THE EDDY
DIFFUSION COEFFICIENT WILL BE ESTIMATED INDEPENDENTLY
FROM WIND SHEAR FLUCTUATIONS, PHOTOGRAPHIC TRAIL
IMAGE DENSITY FLUCTUATIONS, AND TEMPERATURE
FLUCTUATIONS. (AUTHOR MODIFIED ABSTRACT) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 758 587 13/2

RUTGERS - THE STATE UNIV NEW BRUNSWICK N J EAGLETON INST
OF POLITICS

COMPARISON OF MOBILE SOURCE EMISSION FROM
AIRCRAFT, AUTOMOBILES, BUSES, TRUCKS,
RAILROADS, AND ELECTRIC TRAINS (PROJECT
EAGLE).

(U)

DESCRIPTIVE NOTE: FINAL REPT. MAR-DEC 72,
DEC 72 450P BRIGHT, COOPER ; LAMMINEN,
TOIVO ; HANKO, KENNETH ; MULLALY, JAMES ;
CONTRACT: DOT-FA72WA-2877
MONITOR: FAA-EQ 73-2

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, *TRANSPORTATION),
AIRCRAFT, PASSENGER VEHICLES, CARGO VEHICLES, RAILROADS,
CARBON MONOXIDE, HYDROCARBONS, NITROGEN OXIDES,
OXIDIZERS, PARTICLES, SULFUR COMPOUNDS, PREDICTIONS,
TABLES(DATA)

(U)

IDENTIFIERS: *ABATEMENT, *AIR POLLUTION, AUTOMOBILES,
BUSES(VEHICLES), COMPARISON, TRUCKS, EAGLE PROJECT,
EMISSION

(U)

THE STUDY COMPARES MOBILE SOURCE EMISSIONS FROM
AIRCRAFT, AUTOMOBILES, BUSES, TRUCKS, RAILROADS, AND
ELECTRIC TRAINS WITHIN THE CONTINENTAL UNITED
STATES DURING THE PERIOD 1940-1980. THIS
INCLUDES AIR POLLUTION CREATED BY OPERATIONS OF AIR
CARRIERS AND MILITARY AND GENERAL AVIATION AIRCRAFT.
THE POLLUTANTS CONSIDERED FOR ALL THESE MODES OF
TRANSPORTATION ARE CARBON MONOXIDE, HYDROCARBONS AND
NITROGEN OXIDES AND, IN ADDITION, FOR ELECTRIC
TRAINS, POLLUTANT VALUES FOR SULFUR OXIDES AND
PARTICULATES. IT IS DEMONSTRATED THAT FOR THE
PERIOD 1940-1980 PUBLIC CARRIERS INCLUDING AIR
TRANSPORTATION SHOW SIGNIFICANTLY LESS AIR POLLUTION
THAN AUTOS BOTH IN GRAMS PER PASSENGER MILE AND TOTAL
TONS. (AUTHOR MODIFIED ABSTRACT)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 758 666 13/2
STANFORD UNIV CALIF DEPT OF OPERATIONS RESEARCH

A RANDOM MEASURE MODEL FOR THE EMISSION OF
POLLUTANTS BY VEHICLES ON A HIGHWAY. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
FEB 73 33P JACOBS, PATRICIA A. ;
REPT. NO. TR-29
CONTRACT: N00014-67-A-0112-0031, NSF-GP-31392
PROJ: NR-042-265

UNCLASSIFIED REPORT

DESCRIPTORS: (*PASSENGER VEHICLES, AIR POLLUTION), (*AIR
POLLUTION, MATHEMATICAL MODELS), STOCHASTIC PROCESSES,
MEASURE THEORY, RANDOM VARIABLES, THEOREMS, EXHAUST
GASES (U)

IDENTIFIERS: STATISTICAL PROCESSES, *AUTOMOBILE
EXHAUST, CENTRAL LIMIT THEOREM, RANDOM PROCESSES (U)

THE REPORT DEVELOPS AND PROVES A MATHEMATICAL
THEOREM FOR THE PREDICTION OF AIR POLLUTION EMISSIONS
BY VEHICLES ON HIGHWAYS. THE THEOREM ASSUMES THE
VELOCITY OF EACH VEHICLE TO BE INDEPENDENT OF THE
VELOCITIES OF THE OTHER VEHICLES. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 759 680 7/1 13/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

EXHAUST-CONVERTER UNIT, (U)

APR 73 6P KULIKOV, P. V. ; KORETS, S.
B. ; LOPUKHIN, P. E. ; MEDVEDEV, YU. M. ;
KRIKSUNOV, A. S. ;
REPT. NO. FTD-HT-23-294-73

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED TRANS. OF PATENT (USSR) 207
757 P1-2, 22 DEC 72.

DESCRIPTORS: (*EXHAUST GASES, *COMBUSTION),
(*WASTES(INDUSTRIAL), *AIR POLLUTION), COMBUSTION
CHAMBERS, PATENTS, USSR (U)
IDENTIFIERS: *AIR POLLUTION CONTROL EQUIPMENT, (U)
TRANSLATIONS

THE RUSSIAN PATENT DESCRIBES AN EXHAUST-
CONVERSION INSTALLATION, WHICH INCLUDES A HOUSING
WITH A FITTING MADE UP OF CERAMIC RINGS MOUNTED ON A
FRAME WITH A FUEL TANK, FILTER, PUMP, HYDRAULIC
CUTOFF VALVE, FAN, AND CONTROL PANEL. IN THE
SYSTEM, FLUE OR EXHAUST GASES FROM STATIONARY SOURCES
ARE MIXED WITH AN ATOMIZED FUEL AND COMBUSTED. IN
ORDER TO INTENSIFY THE PROCESS OF OBTAINING INERT GAS
FROM PRODUCTS OF LIQUID-FUEL COMBUSTION, THE
INSTALLATION IS EQUIPPED WITH AN INDEPENDENT
COMBUSTION CHAMBER WITH A FUEL NOZZLE, LOCATED IN THE
HOUSING OF THE UNIT. (AUTHOR MODIFIED
ABSTRACT) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 760-395 7/4 13/2
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTESVILLE
VA

CATALYTIC COMBUSTION OF CARBON MONOXIDE IN
GASOLINE ENGINE EXHAUST USING MANGANESE
CATALYSTS (KATALITICHESKOE DOZHIGANIE OKISI
YGLERODA OTRABOTANNYYKH GAZON BENZINOVYKH), (U)

MAR 73 57P CHAGUNAVA, V. T. ;
REPT. NO. FSTC-HT-23-1248-72
PROJ: FSTC-T7023012301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF MONO. MARGANTSEVYE
KATALIZATORY DLYA NEKOTORYH REAKTSII, N.P., 1969
P128-174.

DESCRIPTORS: (*AIR POLLUTION, *CARBON MONOXIDE),
(*EXHAUST GASES, *CATALYSIS), (*CATALYSTS, MANGANESE),
INTERNAL COMBUSTION ENGINES, GASOLINE, TESTS, OXIDATION,
USSR, CHEMICAL REACTIONS, REACTION KINETICS, COPPER
COMPOUNDS (U)

IDENTIFIERS: AIR POLLUTION, CONTROL, *CATALYTIC
REACTORS (EXHAUST SYSTEMS), TRANSLATIONS (U)

IN THE LAST 15 TO 20 YEARS, COMPLEX RESEARCH WORK
IN THE LOWERING OF THE TOXICITY OF EXHAUST GASES OF
THE INTERNAL COMBUSTION ENGINE HAS BEEN DONE. OUT
OF THE VARIOUS PROPOSED METHODS, THE BROADEST
DISSEMINATION WAS ACHIEVED BY THE METHOD OF THE
CATALYTIC AFTERBURNING OF THE PRODUCTS OF INCOMPLETE
FUEL COMBUSTION IN NEUTRALIZERS. IN THE EXISTING
CATALYTIC NEUTRALIZERS THAT HAVE BEEN CONSTRUCTED
ABROAD AS WELL AS IN THE SOVIET UNION, PLATINUM
EITHER ON VARIOUS CARRIERS OR IN ALLOYS WITH OTHER
COMPONENTS WAS USED AS THE CATALYZER. MANGANESE
CATALYZERS FOR THE AFTERBURNING OF THE CARBON
MONOXIDE IN EXHAUST GASES ARE BEING INVESTIGATED IN
THE ACADEMY OF SCIENCES OF THE GEORGIAN
SOVIET SOCIALIST REPUBLIC. PRELIMINARY
RESULTS OF THESE INVESTIGATIONS ARE GIVEN IN THE
PRESENT REPORT. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 762 935 21/5 13/2
PRATT AND WHITNEY AIRCRAFT WEST PALM BEACH FLA

LOW-POWER TURBOPROPULSION COMBUSTOR EXHAUST
EMISSIONS. VOLUME I. THEORETICAL
FORMULATION AND DESIGN ASSESSMENT. (U)

DESCRIPTIVE NOTE: FINAL REPT. 30 JUN 71-30 NOV 72,
JUN 73 330P MOSIER, STANLEY A. ; ROBERTS,
RICHARD ;

REPT. NO. PWA-FR-5415
CONTRACT: F33615-71-C-1870
PROJ: AF-3066
TASK: 306605
MONITOR: AFAPL TR-73-36-VOL-1

UNCLASSIFIED REPORT

DESCRIPTORS: (*GAS TURBINES, *EXHAUST GASES), (*AIR
POLLUTION, EXHAUST GASES), TURBOFAN ENGINES,
HYDROCARBONS, CARBON MONOXIDE, COMBUSTION CHAMBERS,
MATHEMATICAL MODELS, PREDICTIONS, CARBON DIOXIDE, TESTS,
DESIGN, GAS ANALYSIS, CONCENTRATION(CHEMISTRY) (U)
IDENTIFIERS: CHEMICAL COMPOSITION, GAS SAMPLING (U)

AN EXPLORATORY DEVELOPMENT PROGRAM WAS UNDERTAKEN
TO FORMULATE AND DEVELOP A COMPUTERIZED, THEORETICAL
MODEL TO PREDICT EMISSIONS CHARACTERISTICS OF GAS
TURBINE ENGINE COMBUSTORS. IN SUPPORT OF THE MODEL
DEVELOPMENT, A NUMBER OF EXPERIMENTAL STUDIES WERE
CONDUCTED TO PROVIDE INFORMATION FOR STRUCTURING THE
FORMULATION AND FOR GUIDING ITS REFINEMENT. THE
PROGRAMS WERE INCORPORATED TO PROVIDE DATA,
UNAVAILABLE IN THE COMBUSTION LITERATURE, ON REACTION
RATES UNDER REALISTIC BURNER OPERATING CONDITIONS.
THE SURVEY PROGRAM WAS INCORPORATED TO PROVIDE
BASELINE EMISSIONS CHARACTERISTICS FOR A NUMBER OF
EXISTING GAS TURBINE ENGINE BURNERS AGAINST WHICH THE
GENERALITY OF THE MODEL COULD BE ASSESSED.
INDIRECT SUPPORT OF THE MODEL WAS PROVIDED BY A
COMPREHENSIVE TEST PROGRAM IN WHICH COMPONENT DESIGN
TECHNIQUES FOR REDUCING LOW-POWER EMISSIONS BY
CONTROLLING THE PRIMARY-ZONE EQUIVALENCE RATIO WERE
EVALUATED USING A RESEARCH COMBUSTOR. CONTROL
MEANS INCLUDED AIR-STAGING, FUEL-STAGING, AND
PREMIXING OF FUEL AND AIR PRIOR TO THEIR BEING
INTRODUCED INTO THE COMBUSTOR. (MODIFIED AUTHOR
ABSTRACT) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 763 119 13/2 21/5
UNITED AIRCRAFT RESEARCH LABS EAST HARTFORD CONN

ANALYSIS OF JET ENGINE TEST CELL
POLLUTION ABATEMENT METHODS.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT. 21 FEB 72-21 FEB 73,
MAY 73 230P ROBSON, F. L. KESTEN, A.

S. LESSARD, R. D. ;

CONTRACT: F29601-72-C-0049

PROJ: AF-683M

MONITOR: AFWL TR-73-18

UNCLASSIFIED REPORT

DESCRIPTORS: (*JET ENGINES, *EXHAUST GASES), (*AIR
POLLUTION, JET ENGINES), (*TEST FACILITIES, AIR
POLLUTION), CAPTIVE TESTS, COST EFFECTIVENESS, GAS FLOW,
TEST METHODS, PARTICLES, NITROGEN OXIDES, AIRCRAFT
ENGINES, FUEL ADDITIVES, METALORGANIC COMPOUNDS, JET
ENGINE NOISE

(U)

IDENTIFIERS: NOISE REDUCTION, *AIR POLLUTION,
*CONTROL, AIR POLLUTION CONTROL EQUIPMENT, SMOKE,
STATIC TESTS, *EMISSION

(U)

IN ORDER TO ASCERTAIN WHAT METHODS OF EFFLUENT
TREATMENT WOULD BE APPLICABLE TO JET ENGINE TEST
CELLS, A STUDY WAS UNDERTAKEN TO ASSESS CURRENT AND
PROJECTED EXHAUST GAS TREATMENT TECHNOLOGY AND TO
ESTABLISH THAT TECHNOLOGY WHICH RESULTS IN THE MOST
EFFECTIVE CLEANUP PER DOLLAR. EMISSION FACTOR DATA
FOR THE MOST PREVALENT AIR FORCE ENGINES WERE
GATHERED TO DETERMINE WHAT LEVELS OF POLLUTANTS WERE
TO BE DEALT WITH. A THEORETICAL MODEL OF A TEST
CELL AUGMENTOR TUBE WITH LIQUID INJECTION WAS
DEVELOPED TO AID IN ESTIMATING TOTAL SYSTEM FLOW
RATES AS A FUNCTION OF ENGINE OPERATING PARAMETERS.
THE AIR FORCE TEST CELL EMISSION REDUCTION
PROGRAM CAN BE CHARACTERIZED AS HAVING THREE GOALS
WHICH ARE DISCUSSED. THE FIRST OR IMMEDIATE GOAL IS
ONE OF REDUCING VISIBLE EMISSIONS. THE SECOND OR
NEAR-TERM GOAL INVOLVES MEETING PARTICULATE MASS
CRITERIA SUCH AS MIGHT BE PROMULGATED BY THE
ENVIRONMENTAL PROTECTION AGENCY. THE THIRD
OR FUTURE GOAL WOULD BE CONCERNED WITH MEETING THE
MASS EMISSION REGULATIONS FOR NOX. (MODIFIED
AUTHOR ABSTRACT)

(U)

AD-A041 800

DEFENSE DOCUMENTATION CENTER ALEXANDRIA VA
ENVIRONMENTAL POLLUTION: AIR POLLUTION - EXHAUST GASES. (U)
JUL 77

F/G 13/2

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL N

AD- 763 471 4/1 13/2
STANFORD RESEARCH INST MENLO PARK CALIF

STRATOSPHERIC ELECTRICITY.

DESCRIPTIVE NOTE: FINAL REPT.,
APR 73 149P HAKE, RICHARD D. ; PIE
EDWARD T. ; VIEZEE, WILLIAM ;
CONTRACT: N00014-72-C-0259
PROJ: SRI-1724

UNCLASSIFIED REPORT

DESCRIPTORS: (*SUPERSONIC FLIGHT, STATIC ELE
(*STRATOSPHERE, *STATIC ELECTRICITY), (*EXHA
*SUPERSONIC AIRCRAFT), TEMPERATURE, WAKE, OZ
VAPOR, AIR POLLUTION, CARBON DIOXIDE, ELECT
CONDUCTIVITY, COSMIC RAYS, IONS, AEROSOLS

THE MOTIVATION BEHIND THE STUDY DESCRIBED I
REPORT IS THE POSSIBLE CLIMATIC IMPACT OF O
FLEET OF SUPERSONIC TRANSPORTS (SSTS). THE
REPORT FIRST SUMMARIZES INFORMATION ON THE
PROPERTIES OF THE STRATOSPHERE AND ON ITS G
PARTICULATE TRACE CONSTITUENTS. A CRITICAL R
EXPERIMENTAL DATA ON STRATOSPHERE ELECTRIFI
THEN PRESENTED. INFORMATION IS GIVEN ON PRO
OF CONDUCTIVITY (POSITIVE AND NEGATIVE); SM
(CLUSTER-) ION DENSITIES (POSITIVE AND
NEGATIVE); AND ELECTRIC FIELD. SOME OF THE
EXPERIMENTAL RESULTS ARE SHOWN TO BE SUSPEC
MORE RELIABLE EXPERIMENTAL RESULTS, OBTAIN
10 AND 30 KM, INDICATE CONDUCTIVITIES INCR
MONOTONICALLY WITH INCREASING HEIGHT; ELECT
DECREASING MONOTONICALLY AS HEIGHT INCREASE
ION DENSITIES OF THE ORDER OF THOUSANDS PER
WITH A MAXIMUM AT ABOUT 15 KM; LITTLE SPACE
CONSTANT VERTICAL AIR/EARTH CURRENT; AND PO
NEGATIVE SMALL-ION MOBILITIES. FINE- AND LI
SCALE SPATIAL AND TEMPORAL VARIATIONS ARE
SUPERIMPOSED UPON THE GENERAL TREND OF THE
SIMPLE THEORY SHOWS THAT THE MAJOR PHENOMEN
STRATOSPHERIC ELECTRICITY CAN BE MOSTLY EXI
CONSIDERING ION PRODUCTION BY COSMIC RAYS
ION LOSS ONLY BY MUTUAL NEUTRALIZATION
(RECOMBINATION). IT WAS CONCLUDED THAT
STRATOSPHERIC ELECTRIFICATION IS LITTLE AF
GASEOUS CONSTITUENTS, BUT SHOULD BE QUITE
TO CHANGES IN THE NUMBER DENSITY AND SIZE
DISTRIBUTION OF THE STRATOSPHERIC AEROSOL.
(MODIFIED AUTHOR ABSTRACT)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 764 717 21/5 13/2 4/1
ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE
STATION TENN

MEASUREMENT OF EXHAUST EMISSIONS FROM A 185-
GE-5B ENGINE AT SIMULATED HIGH-ALTITUDE
SUPERSONIC FREE-STREAM FLIGHT
CONDITIONS.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT., 15 DEC 72-10 JAN
73,

JUL 73 139P GERMAN, R. C. ; HIGH, M. D.
; ROBINSON, C. E. ;
REPT. NO. AEDC-TR-73-103
CONTRACT: DOT-AS-20024
PROJ: ARO-PA038, ARO-PB038
MONITOR: FAA-RD 73-92

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH ARO,
INC., TULLAHOMA, TENN. REPT. NO. ARO-PWT-TR-
73-49.

DESCRIPTORS: (*TURBOJET ENGINES, *EXHAUST GASES),
(*STRATOSPHERE, EXHAUST GASES), (*AIR POLLUTION,
STRATOSPHERE), CLIMATE, GAS ANALYSIS, CAPTIVE TESTS,
SUPERSONIC COMBUSTION, TABLES(DATA), CARBON DIOXIDE,
CARBON MONOXIDE, HYDROCARBONS, NITROGEN OXIDES,
PARTICLES

(U)

IDENTIFIERS: J-85 ENGINES, J-85-GE-5 ENGINES

(U)

EXHAUST EMISSIONS WERE MEASURED IN THE PLUME OF A
J85-GE-5 TURBOJET ENGINE AS PART OF AN
INVESTIGATION TO DETERMINE THE IMPACT ON THE CLIMATE
OF A FLEET OF SUPERSONIC AIRCRAFT FLYING IN THE
STRATOSPHERE. MEASUREMENTS WERE MADE FOR BOTH
MILITARY AND PARTIAL AFTERBURNING POWER AT MACH
NUMBERS AND SIMULATED ALTITUDES OF MACH 1.6/55,000
FT AND MACH 2.0/65,000 FT. A CONTINUOUS SAMPLING
TECHNIQUE WAS USED TO MEASURE CARBON DIOXIDE, CARBON
MONOXIDE, TOTAL UNBURNED HYDROCARBONS, OXIDES OF
NITROGEN, AND PARTICULATES. THE EXPERIMENTAL
RESULTS WERE COMPARED WITH THE CALCULATED EMISSION
PROFILES AND WERE IN GOOD AGREEMENT. THE RESULTS
REPRESENT THE ONLY AVAILABLE FULL-SCALE TURBOJET
ENGINE EMISSION DATA TO DATE WHICH HAVE BEEN OBTAINED
AT SIMULATED HIGH ALTITUDE WITH A SUPERSONIC EXTERNAL
STREAM. (MODIFIED AUTHOR ABSTRACT)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 764 854 13/2
NAVAL AIR ENGINEERING CENTER PHILADELPHIA PA GROUND SUPPORT
EQUIPMENT DEPT

POLLUTION IN THE GROUND SUPPORT
ENVIRONMENT.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

JUL 73 28P ZACHARKIW, PETER B. ; WOMER,
WILLIAM H. ;
REPT. NO. NAEC-GSED-69
PROJ: A340-5344/200-B/2F00-554-401

UNCLASSIFIED REPORT

DESCRIPTORS: (*NAVAL AIR STATIONS, AIR POLLUTION),
(*GROUND SUPPORT EQUIPMENT, *AIR POLLUTION), NOISE,
EXHAUST GASES, STANDARDS

(U)

IDENTIFIERS: NOISE POLLUTION, NOISE REDUCTION, AIR
POLLUTION CONTROL EQUIPMENT, RECOMMENDATIONS

(U)

THE STUDY WAS INITIATED TO SURVEY THE NAVAL
AIR/GROUND SUPPORT ENVIRONMENT TO DETERMINE IF
THERE ARE POLLUTION PROBLEMS RELATED TO GROUND
SUPPORT EQUIPMENT. THREE MAJOR OBJECTIVES EXIST IN
THIS STUDY. (A) TO IDENTIFY SPECIFIC POLLUTION-
CAUSING SYSTEMS OF ALL TYPES IN THE NAVY GROUND
SUPPORT ENVIRONMENT. (B) TO RECOMMEND
PRACTICAL SOLUTIONS TO THESE SPECIFIC POLLUTION-
CAUSING PROBLEMS. (C) TO INSURE THAT ALL FUTURE
PROCUREMENTS OF GSE ARE AS 'POLLUTION FREE' AS
PRACTICABLE, BY ALIGNING THE POLLUTION LIMITATIONS OF
GSE WITH THE CORRESPONDING REQUIREMENTS FOR SIMILAR
EQUIPMENT ESTABLISHED BY EPA.

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 764 893 4/1
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION SILVER
SPRING MD AIR RESOURCES LABS

LONG-RANGE TRANSPORT AND DIFFUSION
EXPERIMENTS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,
MAY 73 89P FERBER, GILBERT J. ; LIST,
ROBERT J. ;
CONTRACT: ARPA ORDER-1841
PROJ: VT/1416

UNCLASSIFIED REPORT

DESCRIPTORS: (*ATMOSPHERIC MOTION, *TRACER STUDIES),
(*AIR POLLUTION, ATMOSPHERIC MOTION), RADIOACTIVE
ISOTOPES, KRYPTON, FEASIBILITY STUDIES, HALOGENATED
HYDROCARBONS, FLUORINE COMPOUNDS, SULFUR COMPOUNDS, TEST
METHODS (U)
IDENTIFIERS: ATMOSPHERIC DENSITY, DIFFUSION, PLUMES,
FIELD TESTS, KRYPTON 85, SULFUR HEXAFLUORIDE (U)

THE PURPOSE OF THE PROJECT IS TO INVESTIGATE THE
FEASIBILITY OF CONDUCTING LONG-RANGE ATMOSPHERIC
TRACER EXPERIMENTS TO STUDY TRANSPORT AND DIFFUSION
OF AIR POLLUTION PLUMES OVER CONTINENTAL DISTANCES.
THE STUDY CONSIDERED THE FEASIBILITY OF A SERIES OF
EXPERIMENTS IN WHICH A TRACER GAS WOULD BE RELEASED
IN THE WESTERN U.S. AND CROSS-COUNTRY AIR
SAMPLING WOULD BE CARRIED OUT TO DETERMINE THE
DISTRIBUTION OF THE TRACER AS A FUNCTION OF TIME AND
DISTANCE FROM THE SOURCE, AT GROUND LEVEL AND ALOFT.
TWO MAIN ALTERNATIVES WERE CONSIDERED. THE FIRST
INVOLVES TAKING ADVANTAGE OF A SOURCE OF OPPORTUNITY,
85KR EMITTED FROM A NUCLEAR FUEL REPROCESSING
PLANT, TO OBTAIN LONG-RANGE PLUME DATA. THE SECOND
WOULD USE CF₂BR₂ OR C₂F₄BR₂. A SHORT
RANGE EVALUATION WAS MADE USING SF₆ AS A CONTROL
TRACER. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 764 987 13/2 21/5
GENERAL MOTORS CORP INDIANAPOLIS IND DETROIT DIESEL
ALLISON DIV

INVESTIGATION OF AIRCRAFT GAS TURBINE
COMBUSTOR HAVING LOW MASS EMISSIONS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,
APR 73 726P TROTH, D. L. IVERDOUW, A.
J. IVERKAMP, F. J. I
REPT. NO. ERD-7725
CONTRACT: DAAJ02-72-C-0005
PROJ: DA-1-G-162207-AA-71
TASK: 1-G-162207-AA-7102
MONITOR: USAAMRDL TR-73-6

UNCLASSIFIED REPORT

DESCRIPTORS: (*GAS TURBINES, *AIR POLLUTION), (*EXHAUST
GASES, GAS TURBINES), COMBUSTION CHAMBERS, TURBINE
PARTS, HELICOPTER ENGINES, CARBON MONOXIDE, NITROGEN
OXIDES, HYDROCARBONS, TESTS, PARTICLES (U)
IDENTIFIERS: AIR POLLUTION CONTROL EQUIPMENT, *AIR
POLLUTION, *CONTROL, BASELINE MEASUREMENTS (U)

THE OBJECTIVE OF THIS ONE-YEAR PROGRAM WAS TO
DEVELOP AND DEMONSTRATE EMISSION ABATEMENT TECHNOLOGY
SUFFICIENT TO OBTAIN A 50% OVERALL REDUCTION IN GAS
TURBINE ENGINE MASS EMISSIONS (CO, CXHY, NOX
AND SMOKE) WITH NO INCREASE IN ANY INDIVIDUAL
POLLUTANT WHEN TESTED OVER A TYPICAL ARMY LIGHT
OBSERVATION HELICOPTER (LOH) DUTY CYCLE. THE
SELECTED BASELINE WAS THE ARMY T63-A-5A GAS
TURBINE ENGINE COMBUSTOR. SEVENTEEN POTENTIAL LOW-
EMISSION COMBUSTORS, EACH INCORPORATING ONE OR MORE
OF THE SELECTED CONCEPTS, WERE TESTED TO DETERMINE
THEIR EMISSION PERFORMANCE. EXPERIMENTAL RESULTS
INDICATED THAT SEVERAL DESIGNS HAD THE POTENTIAL FOR
MEETING THE PROGRAM OBJECTIVES. TWO COMBUSTORS
SELECTED FOR FINAL EXPERIMENTAL EVALUATION WERE THE
'PRECHAMBER' AND 'MODIFIED CONVENTIONAL.'
THE LOW-EMISSION FEATURE IN THE 'PRECHAMBER'
COMBUSTOR WAS PREMIX/PREVAPORIZATION. THE
'MODIFIED CONVENTIONAL' COMBUSTOR INCORPORATED
FOUR LOW-EMISSION FEATURES: AIRBLAST FUEL
ATOMIZATION, DELAYED DILUTION, CONVECTION COOLING,
AND VARIABLE GEOMETRY. BOTH OF THESE COMBUSTORS
MET THE EMISSION REDUCTION OBJECTIVES. EXPERIMENTAL
RESULTS INDICATED THAT BOTH OF THESE LINERS CAN BE
DEVELOPED TO MEET ALL OTHER CONVENTIONAL T63
COMBUSTOR REQUIREMENTS.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 765 508 13/2 21/5 21/7
SCOTT RESEARCH LABS INC PLUMSTEADVILLE PA

EXHAUST EMISSIONS FROM MILITARY ENGINE
GENERATOR SETS. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. SEP 71-JAN 72,
JAN 72 131P SQUIRES, ROBERT ;
REPT. NO. SRL-1248-02-0172
CONTRACT: DAAK02-71-C-0522

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: ADDENDUM DATED MAR 72 INSERTED.

DESCRIPTORS: (*MOTOR GENERATORS, *EXHAUST GASES),
(*ENGINES, EXHAUST GASES), FUELS, INTERNAL COMBUSTION
ENGINES, DIESEL ENGINES, RANKINE CYCLE, TURBINES,
CARBURETORS, EXTERNAL COMBUSTION ENGINES, GASOLINE, GAS
ANALYSIS, CARBON DIOXIDE, CARBON MONOXIDE, NITROGEN
OXIDES, HYDROCARBONS, DATA, (U)DATA (U)
IDENTIFIERS: CATALYTIC REACTORS(EXHAUST SYSTEMS),
SPECTROSCOPIC ANALYSIS, DIESEL ENGINE EXHAUST (U)

THE AUTHORS MEASURED AND DOCUMENTED THE EXHAUST
EMISSION CHARACTERISTICS OF FOUR GASOLINE, SEVEN
DIESEL, TWO TURBINE, ONE STRATIFIED CHARGE
COMBUSTION, AND ONE RANKINE CYCLE POWERED ENGINE-
GENERATOR SETS. COMPARATIVE EMISSIONS WERE ALSO
MEASURED AND DOCUMENTED FOR SPECIFIED ENGINES
EQUIPPED WITH VARIABLE JET CARBURETORS, CATALYTIC
REACTORS, OZONATOR, OR AIR INJECTION SYSTEM.
EXHAUST COMPONENT CONCENTRATIONS AND FUEL
CONSUMPTION RATES WERE MEASURED AT SPECIFIED ENGINE
OPERATING CONDITIONS (GOVERNED RPM AND VARIABLE
LOADS). THE EXHAUST ANALYZER READINGS WERE
CONVERTED TO POLLUTANT CONCENTRATIONS AND ARE
PRESENTED IN THIS REPORT. (MODIFIED AUTHOR
ABSTRACT) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 766 648 21/5

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE
STATION TENN

EMISSION MEASUREMENTS OF A J93 TURBOJET
ENGINE.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 8 JUN-31 JUL 72,
SEP 73 98P DAVIDSON, D. L. DOMAL, A.

F. J

REPT. NO. AEDC-TR-73-132

PROJ: ARO-RA109

MONITOR: FAA-RD 73-66

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH ARO,
INC., TULLAHOMA, TENN. REPT. NO. ARO-ETF-TR-
73-46.

DESCRIPTORS: (*TURBOJET ENGINES, EXHAUST GASES),
(*EXHAUST GASES, GAS ANALYSIS), CARBON MONOXIDE, CARBON
DIOXIDE, NITROGEN OXIDES, HYDROCARBONS, AIR POLLUTION,
PARTICLES, SIMULATION (U)
IDENTIFIERS: FLIGHT SIMULATION, J-93 ENGINES (U)

EXHAUST GAS EMISSION MEASUREMENTS WERE MADE AT THE
NOZZLE OF A J93 TURBOJET ENGINE AT SIMULATED FLIGHT
CONDITIONS FROM SEA-LEVEL STATIC TO MACH 2.0 AT 75,
000 FT AND MACH 2.6 AT 65,000 FT. REAL TIME
MEASUREMENTS OF CO, CO2, CXHY, NO, AND
NOX WERE TAKEN OVER A RANGE OF AFTER-BURNING AND
NONAFTERBURNING ENGINE POWER SETTINGS USING A GAS
SAMPLING SYSTEM DESIGNED TO ADHERE TO SAE ARP 1256
SPECIFICATIONS. IN ADDITION, NO AND OH WERE
MEASURED IN SITU BY A NARROW-LINE UV SPECTRAL
ABSORPTION TECHNIQUE. BATCH-TYPE MEASUREMENTS OF
PARTICULATES AND OTHER TRACE CONSTITUENTS OF THE
EXHAUST GAS WERE ALSO MADE. MAJOR RESULTS OF THE
TEST WERE THAT EMISSIONS VARY SIGNIFICANTLY WITH
COMBUSTOR INLET PRESSURE AND TEMPERATURE AND,
THEREFORE, WITH MACH NUMBER AND ALTITUDE.
(MODIFIED AUTHOR ABSTRACT)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 768 120 13/2
ARMY MATERIEL COMMAND TEXARKANA TEX INTERN TRAINING
CENTER

THE EFFECT OF EMISSIONS CONTROL REGULATIONS
UPON INTERNAL COMBUSTION ENGINE
MAINTENANCE, (U)

JUN 73 35P BINFORD, JOHN D. ;
REPT. NO. USAMC-ITC-1-73-02

UNCLASSIFIED REPORT

DESCRIPTORS: (*EXHAUST GASES, MOTOR VEHICLE), (*INTERNAL
COMBUSTION ENGINES, *MAINTENANCE), CALIFORNIA, LAW,
COSTS (U)

IDENTIFIERS: ABATEMENT, AIR POLLUTION, AUTOMOBILE
EXHAUSTS, REGULATIONS, AUTOMOBILE ENGINES,
LEGISLATION, *AIR POLLUTION, *CONTROL (U)

A COMPREHENSIVE HISTORY OF EMISSIONS REGULATION AND
DISCUSSION OF THEIR EFFECT UPON THE MAINTENANCE OF
INTERNAL COMBUSTION ENGINES IS PRESENTED. THE
FURTHER CONSTRAINT OF EMISSIONS REGULATIONS BY
STATUTE IS PLACING AN INCREASING BURDEN UPON THE
ENGINE DESIGNER: VARIOUS SOLUTIONS ARE EXAMINED
AND EVALUATED. (MODIFIED AUTHOR ABSTRACT) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 00CM1

AD- 747 608 21/5 13/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

THE TOXICITY OF EXHAUST GASES FROM THE GAS-
TURBINE ENGINE OF A DUMP TRUCK, (U)

MAY 72 12P SHTEINBERG, A. S. ITSVETKOV,
S. I. EVGRAFOV, K. G. ZOLOTAREVSKII, L. S.

REPT. NO. FTD-MT-24-1698-71
PROJ: AF-668A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF
AVTOMOBILNAYA PROMYSHLENNOST (USSR) V36 N8 P6-7 1970,
BY CHARLES T. OSTERTAG, JR.

DESCRIPTORS: (*EXHAUST GASES, *AIR POLLUTION), (*GAS
TURBINES, EXHAUST GASES), (*CARGO VEHICLES, EXHAUST
GASES), CONCENTRATION(CHEMISTRY), CARBON MONOXIDE,
HYDROCARBONS, ALDEHYDES, NITROGEN OXIDES, CARBON BLACK,
PARTICLES, USSR (U)

IDENTIFIERS: MOTOR TRUCKS, TRANSLATIONS, DUMP
TRUCKS (U)

RESULTS ARE PRESENT FROM A STUDY CONDUCTED TO
DETERMINE THE CONCENTRATION OF EXHAUST GASES FROM A
1200 HP MOTOR VEHICLE GAS TURBINE ENGINE. IT WAS
FOUND THAT THESE GASES ARE ONE TENTH OF THOSE OF A
DIESEL ENGINE OF THE SAME HORSEPOWER.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 747 773 13/2 21/5
ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE
STATION TENN

MEASUREMENT OF POLLUTANT EMISSIONS FROM AN
AFTERBURNING TURBOJET ENGINE AT GROUND
LEVEL. II. GASEOUS EMISSIONS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 22 JUN-21 SEP 71,
AUG 72 65P LAZALIER, G. R. ; GEARHART,

J. W. ;

REPT. NO. AEDC-TR-72-20

CONTRACT: F40600-73-C-0004

PROJ: AF-3066, ARO-RW-5239

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH ARO,
INC., TULLAHOMA, TENN. REPT. NO. ARO-ETF-TR-
72-30. SEE ALSO PART 1, AD-744 048.

DESCRIPTORS: (*TURBOJET ENGINES, EXHAUST GASES),
(*EXHAUST GASES, *AFTERBURNERS), (*AIR POLLUTION,
EXHAUST GASES), (*GAS DETECTORS, EXHAUST GASES),
AIRCRAFT ENGINES, CARBON MONOXIDE, CARBON DIOXIDE,
NITROGEN OXIDES, HYDROCARBONS, MEASUREMENT, GAS
ANALYSIS, HUMIDITY, WIND, DIFFUSION,
CONCENTRATION(CHEMISTRY), INFRARED SPECTROSCOPY,
ELECTROCHEMISTRY, GAS IONIZATION

(U)

IDENTIFIERS: *AIRCRAFT EXHAUST, PLUMES, FLAME
IONIZATION DETECTORS, J-85 ENGINES, J-85-GE-5
ENGINES

(U)

THE PERFORMANCE OF A SAMPLING AND MEASUREMENT
SYSTEM FOR THE GASEOUS SPECIES OF CARBON MONOXIDE
(CO), CARBON DIOXIDE (CO₂), TOTAL HYDROCARBONS
(C(X)H(Y)), NITROGEN DIOXIDE (NO₂), AND
TOTAL OXIDES OF NITROGEN (NO(X)) WAS DEMONSTRATED
FOR AN AFTERBURNING TURBOJET ENGINE POWER CONDITIONS
FROM IDLE TO MAXIMUM AFTERBURNING AT GROUND LEVEL.
DATA WERE OBTAINED, USING A PROBABLE EMISSIONS
MEASUREMENT SYSTEM, AT POSITIONS RANGING FROM
IMMEDIATELY AT THE NOZZLE EXIT TO 96 FT AFT OF THE
NOZZLE EXIT PLANE. A J85-GE-5 ENGINE WAS USED
TO GENERATE THE GASEOUS EMISSIONS. NONDISPERSIVE
INFRARED DETECTORS WERE USED FOR CO AND CO₂
MEASUREMENTS; A FLAME IONIZATION DETECTOR WAS USED
FOR C(X)H(Y) MEASUREMENTS; AND ELECTROCHEMICAL
DEVICES OPERATING ON THE FUEL CELL PRINCIPLE WERE
USED FOR NO₂ AND NO(X) MEASUREMENTS.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 747 885 13/2 21/2
NATIONAL AVIATION FACILITIES EXPERIMENTAL CENTER ATLANTIC
CITY N J

RELATIONSHIP BETWEEN THE SAE SMOKE NUMBER
AND JET AIRCRAFT SMOKE VISIBILITY.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 1970-1971;
DEC 71 24P SLUSHER, GERALD R. ;
REPT. NO. FAA-NA-71-25
PROJ: FAA-502-306-02X
MONITOR: FAA-RD 71-23

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, EXHAUST GASES), (*EXHAUST
GASES, VISIBILITY), (*AIRCRAFT ENGINES, AIR POLLUTION),
(*JET ENGINES, AIR POLLUTION), PARTICLES, LIGHT
TRANSMISSION, SCATTERING, GAS TURBINES, DENSITY,
MEASUREMENT

(U)

IDENTIFIERS: *AIR POLLUTION DETECTION, *AIRCRAFT
EXHAUST, PLUMES, *SMOKE NUMBER, SMOKE, *JET ENGINE
EXHAUST

(U)

A METHOD WAS DEVELOPED USING THE SOCIETY OF
AUTOMOTIVE ENGINEERS (SAE) SMOKE NUMBERS FOR
CALCULATING THE EXHAUST SMOKE TRANSMISSION FOR
TURBINE ENGINES, NUMBER OF PLUME PATHS, AND VIEWING
ANGLES. CRITERIA WERE DEVELOPED RELATING THE SAE
SMOKE NUMBER TO ENGINE AIRFLOW AND THUS TO ENGINE
SIZE FOR CONDITIONS OF VISIBLE AND INVISIBLE SMOKE.
TRANSMISSION OF MULTIPLE PLUMES WAS CALCULATED AND
IS PRESENTED. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 748 080 13/2
EDGEWOOD ARSENAL MD

ENVIRONMENTAL INSTRUMENTATION CONFERENCE, U.
S. ARMY MATERIEL COMMAND HELD AT EDGEWOOD
ARSENAL, MARYLAND ON 28-29 MARCH 1972.

(U)

DESCRIPTIVE NOTE: SPECIAL PUBLICATION,
JUL 72 68P HILSMEIER, ALLEN E. ;
REPT. NO. EA-SP-1800-5

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, DETECTORS), (*WATER
POLLUTION, DETECTORS), MONITORS, GAS DETECTORS,
SCIENTIFIC RESEARCH, CHEMICAL ANALYSIS, EXHAUST GASES,
PARTICLES, MUNITIONS INDUSTRY, WASTES(INDUSTRIAL),
CHEMICAL WARFARE AGENTS, SAMPLERS, SYMPOSIA (U)
IDENTIFIERS: *WATER POLLUTION DETECTION, WATER
ANALYSIS, *AIR POLLUTION DETECTION, REMOTE SENSIN,
JOINT PANEL AMMUNITION DISPOSAL, JPAD(JOINT
PANEL AMMUNITION DISPOSAL) (U)

THE REPORT CONTAINS ABSTRACTS OF THE PRESENTATIONS
GIVEN AT THE ENVIRONMENTAL INSTRUMENTATION
CONFERENCE FOR THE ARMY MATERIEL COMMAND
WHICH WAS HELD AT EDGEWOOD ARSENAL, MARYLAND ON
28 AND 29 MARCH 1972. THE MEETING HAD A TWOFOLD
PURPOSE - TO PRESENT AN UP-TO-DATE ACCOUNT OF
TECHNICAL INSTRUMENTS CURRENTLY USED IN MONITORING
AND ANALYZING THE NATION'S AIR AND WATER AND TO
EXCHANGE IDEAS ABOUT THE FUTURE REQUIREMENTS FOR
SCIENTIFIC DEVELOPMENTS IN THE ARMY POLLUTION
ABATEMENT PROGRAMS. REPRESENTATIVES FROM TWENTY
AMC COMMANDS, AS WELL AS DELEGATES FROM THE
OFFICE OF THE SURGEON GENERAL, THE ARMY
CORPS OF ENGINEERS, AND THE ARMY
ENVIRONMENTAL HYGIENE AGENCY PARTICIPATED IN
THE TWO-DAY CONFERENCE. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 748 797 4/1
AIR FORCE CAMBRIDGE RESEARCH LABS L G HANSCOM FIELD
MASS

HOW DRY IS THE SKY. A DECADE LATER AND
THE SST.

(U)

DESCRIPTIVE NOTE: AIR FORCE SURVEYS IN GEOPHYSICS,
APR 72 31P SISENWIN, NORMAN ; KANTOR,
ARTHUR J. ; GRANTHAM, DONALD D. ;
REPT. NO. AFCRL-AFSIG-240, AFCRL-72-0294
PROJ: AF-8624
TASK: 862401

UNCLASSIFIED REPORT

DESCRIPTORS: (*STRATOSPHERE, *WATER VAPOR), (*SUPERSONIC
AIRCRAFT, AIR POLLUTION), (*AIR POLLUTION, EXHAUST
GASES), HUMIDITY, CLOUDS, TRANSPORT AIRCRAFT, COMMERCIAL
PLANES (U)
IDENTIFIERS: *AERONOMY, SUPERSONIC TRANSPORTS (U)

WATER VAPOR THAT WOULD BE ADDED TO THE STRATOSPHERE
BY A POTENTIAL FLEET OF SSTs IS RELATED TO THE MOST
ACCEPTED HUMIDITY BALANCE IN THE STRATOSPHERE BASED
ON GENERAL CIRCULATION CONSIDERATIONS, AND TO
MOISTURE INTRODUCED INTO THE STRATOSPHERE BY
VAPORIZATION FROM CONVECTIVE CLOUDS. A MEAN
RESIDENCE TIME OF 25 MONTHS FOR WATER VAPOR WAS
CALCULATED FROM GENERAL CIRCULATION VALUES. ON THE
ASSUMPTION THAT OTHER WATER VAPOR REACHING THE
STRATOSPHERE WAS AN EQUAL TIME OF RESIDENCE, A FLEET
OF SSTs WOULD INCREASE HUMIDITY BY 0.5 PPM OR 25
PERCENT OF THE GENERALLY ACCEPTED 2 PPM EQUILIBRIUM
VALUE. VAPORIZATION OF ONLY 1 PERCENT OF THE
CONVECTIVE CLOUD MASS, CALCULATED HEREIN TO ENTER THE
STRATOSPHERE, WOULD INCREASE ITS MIXING RATIO BY 1
PPM. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 748 884 7/1 13/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

EXTREME PURIFICATION OF EXHAUST GASES TO
REMOVE OXIDES OF NITROGEN, (U)

MAY 72 11P PICCHELAURI, EVGENII N. ;
KOBOTSEV, NIKOLAI I. ; MAEVSKAYA, EKATERINA S. ;
EMEL'YANOV, YURI I. M. ; GALANIN, IVAN I. ;
REPT. NO. FTD-HC-23-380-72
PROJ: AF-G101

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF
PATENT (GERMANY) 19 258 71 P1-12 1970.

DESCRIPTORS: (*NITROGEN OXIDES, *DECOMPOSITION), (*AIR
POLLUTION, NITROGEN OXIDES), OZONE, PURIFICATION,
ADSORPTION, CATALYSTS, WASTES (INDUSTRIAL), PATENTS, WEST
GERMANY (U)

IDENTIFIERS: *OZONIZATION, *AIR POLLUTION, *CONTROL,
*GAS PURIFICATION, TRANSLATIONS (U)

A PROCESS FOR EXTREME PURIFICATION OF GASES FROM
OXIDES OF NITROGEN IS DESCRIBED. THE GAS, WHICH
CONTAINS OXIDES OF NITROGEN, IS OXIDIZED BY EXCESS
OZONE OR A MIXTURE OF OZONE AND OXYGEN OR AIR.
THIS FORMS NITROGEN PENTOXIDE WHICH IS REMOVED BY
AQUEOUS ADSORPTION. ANY EXCESS OZONE IS REMOVED BY
ADSORPTION OR CATALYSIS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 749 195 7/4 13/2
CALIFORNIA UNIV LOS ANGELES DEPT OF CHEMISTRY

UNSEPARATED RARE EARTH COBALT OXIDES AS
AUTO EXHAUST CATALYSTS, (U)

APR 72 2P PEDERSEN, LEE A. ; LIBBY, W.

F. ;

REPT. NO. CONTRIB-2963

CONTRACT: AF-AFOSR-2019-71, NGL-05-007-003

PROJ: AF-9538

MONITOR: AFOSR

TR-72-1817

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN SCIENCE, V176 P1355-1356, 23
JUN 72.

DESCRIPTORS: (*CATALYSTS, *RARE EARTH ELEMENTS),
(*EXHAUST GASES, *OXIDATION), OXIDES, TEST METHODS,
ALKENES, IMPURITIES, AIR POLLUTION, COBALT COMPOUNDS, (U)
LANTHANUM COMPOUNDS
IDENTIFIERS: *AIR POLLUTION, *CONTROL, *AUTOMOBILE (U)
EXHAUST, COBALT OXIDES

SINCE MEADOWCRAFT REPORTED THAT STRONTIUM-DOPED
LAC003 WAS COMPARABLE TO PLATINUM AS AN OXYGEN
ELECTRODE, THE TESTING OF THE CATALYTIC ACTIVITY OF
LAC003 ON CERTAIN GAS SYSTEMS HAS BEEN PURSUED.
THIS PARTICULAR RARE EARTH COBALT OXIDE AGAIN HAD
ACTIVITY WHICH RIVALED PLATINUM. THE COMPOUND WAS
SUGGESTED AS A CANDIDATE FOR AUTO EXHAUST CATALYSIS.
AS A NEXT STEP, COBALT OXIDES WITH OTHER RARE
EARTHS HAVE BEEN PREPARED, AND THEIR CATALYTIC
ACTIVITIES HAVE BEEN PREPARED. LITTLE DIFFERENCE
BETWEEN THEM HAS BEEN FOUND. THIS RESULT SUGGESTED
THAT A CATALYST, JUST AS EFFECTIVE, COULD BE MADE
FROM THE UNSEPARATED RARE EARTHS WITH SUBSTANTIAL
COST SAVINGS. TESTS WITH THE RARE EARTH MIXTURE AS
MINED DID GIVE EQUALLY SATISFACTORY RESULTS. (U)
(AUTHOR)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 749 457

13/2

ILLINOIS UNIV URBANA DEPT OF MECHANICAL AND INDUSTRIAL
ENGINEERING

PREDICTION OF EXHAUST EMISSIONS FROM PRIME
MOVERS AND SMALL HEATING PLANT FURNACES.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT.,

JUL 72 109P

SORENSEN, SPENCER C. ; STUKEL,

JAMES J. ; HULL, WILLIAM L. ;

CONTRACT: DACA23-70-C-0080

MONITOR: CERL TR-E-1

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, *EXHAUST GASES),
(*COMBUSTION PRODUCTS, AIR POLLUTION, *GAS TURBINES,
EXHAUST GASES), (*SPARK IGNITION ENGINES, EXHAUST
GASES), (*DIESEL ENGINES, EXHAUST GASES), (*FURNACES,
COMBUSTION PRODUCTS), PREDICTIONS, PARTICLES, NITROGEN
OXIDES, SULFUR COMPOUNDS, HYDROCARBONS, CORRELATION
TECHNIQUES, CARBON DIOXIDE, MATHEMATICAL ANALYSIS,
OXIDES, CARBON MONOXIDE

(U)

IDENTIFIERS: SMOKE NUMBER, SULFUR DIOXIDE,

*EMISSION

(U)

THE REPORT IS THE RESULT OF AN INVESTIGATION OF THE
POSSIBILITIES OF PREDICTING THE EXHAUST EMISSIONS
FROM VARIOUS TYPES OF ENGINES AND SMALL HEATING PLANT
FURNACES. THE ENGINES INVESTIGATED INCLUDE SPARK
IGNITION ENGINES, COMPRESSION IGNITION ENGINES, AND
GAS TURBINES. BASED ON A SURVEY OF CURRENTLY
AVAILABLE LITERATURE AND DATA, IT WAS DETERMINED THAT
CARBON MONOXIDE AND OXIDES OF NITROGEN CORRELATE
REASONABLY WELL WITH BASIC ENGINE VARIABLES FOR SPARK
IGNITION AND COMPRESSION IGNITION ENGINES.
HYDROCARBON EMISSIONS IN THESE ENGINES DO NOT
CORRELATE WELL, EVEN THOUGH SOME CONSISTENT EFFECTS
OF VARIABLES WERE FOUND FOR SPARK IGNITION ENGINES.
RECENT CORRELATIONS OF VARIOUS SMOKE MEASURING
DEVICES ARE PRESENTED. CORRELATION RELATING
EMISSIONS OF SULFUR DIOXIDE AND TOTAL OXIDES OF
NITROGEN FOR SMALL HEATING PLANT FURNACES WITH THE
GROSS HEAT INPUT FOR OIL-, COAL-, AND GAS-FIRED UNITS
WERE ESTABLISHED. IN ADDITION, EQUATIONS USED TO
CALCULATE THEORETICAL CARBON DIOXIDE EMISSIONS FOR
GASEOUS, LIQUID, AND SOLID FUELS ARE PRESENTED.
EMISSION FACTORS FOR THESE POLLUTANTS ARE
PRESENTED.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 751 295 4/1 13/2
INSTITUTE FOR DEFENSE ANALYSES ARLINGTON VA JASON DIV

STRATOSPHERIC NITRIC OXIDE PRODUCTION FROM
PAST NUCLEAR EXPLOSIONS AND ITS RELEVANCE
TO PROJECTED SST POLLUTION, (U)

AUG 72 33P FOLEY, H. M. ; RUDERMAN, M.
A. ;
REPT. NO. P-894
MONITOR: IDA-HQ 72-14452

UNCLASSIFIED REPORT

DESCRIPTORS: (*STRATOSPHERE, *NITROGEN OXIDES),
(*SUPERSONIC AIRCRAFT, NITROGEN OXIDES), (*NUCLEAR
EXPLOSIONS, STRATOSPHERE), (*EXHAUST GASES, SUPERSONIC
AIRCRAFT), (*OZONE, STRATOSPHERE), AIR POLLUTION,
CONCENTRATION(CHEMISTRY), GAS IONIZATION, CATALYSTS (U)
IDENTIFIERS: NITROGEN OXIDE(NO), *AERONOMY (U)

IT IS SHOWN THAT DURING CERTAIN YEARS OF INTENSE
NUCLEAR TESTING, HIGH-YIELD NUCLEAR EXPLOSIONS SEEM
TO HAVE INJECTED INTO THE STRATOSPHERE A FEW TIMES 10
TO THE 34TH POWER NITRIC OXIDE MOLECULES. THIS IS
VERY SIMILAR TO UPPER ESTIMATES FOR NO GENERATION
FROM 500 SSTs FLYING FOR A YEAR. LARGE CATALYTIC
OZONE REDUCTION FROM SUCH NO INJECTION WAS NOT
OBSERVED IN WORLDWIDE OR LOCAL TOTAL OZONE
MEASUREMENTS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 751 439 13/2 6/20
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB
OHIO

NEW FEDERAL AIR QUALITY STANDARDS, (U)

DEC 71 23P STOPINSKI, ORIN W. ;
REPT. NO. AMRL-TR-71-120-PAPER-17
PROJ: AF-6302

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED AT THE ANNUAL CONFERENCE
ON ENVIRONMENTAL TOXICOLOGY (2ND), FAIRBORN,
OHIO, 31 AUG, 1-2 SEP 71, SPONSORED BY THE
SYSTEMED CORP., DAYTON, OHIO. SEE ALSO AD-751
438 AND AD-751 440.

DESCRIPTORS: (*AIR POLLUTION, STANDARDS), (*TOXICITY,
AIR POLLUTION), (*PUBLIC HEALTH, AIR POLLUTION), LAW,
NITROGEN OXIDES, SULFUR COMPOUNDS, HYDROCARBONS,
OXIDIZERS, CARBON MONOXIDE, PARTICLES, MONITORS,
EXPOSURE(PHYSIOLOGY) (U)

IDENTIFIERS: LEGISLATION, NITROGEN OXIDE(NO2), AIR
POLLUTION EFFECTS(ANIMALS), *AIR POLLUTION STANDARDS,
GOVERNMENT POLICIES, SULFUR DIOXID, JOINT PANEL
AMMUNITION DISPOSAL, JPAD(JOINT PANEL
AMMUNITION DISPOSAL) (U)

THE REPORT DISCUSSES THE CURRENT PROCEDURES FOR
ESTABLISHING AIR QUALITY STANDARDS, THE BASES FOR
STANDARDS, AND, FINALLY, PROPOSED AND FINAL
NATIONAL PRIMARY AND SECONDARY AMBIENT AIR
QUALITY STANDARDS FOR SULFUR DIOXIDE, PARTICULATE
MATTER, CARBON MONOXIDE, NONMETHANE HYDROCARBONS,
PHOTOCHEMICAL OXIDANTS, AND NITROGEN DIOXIDE.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 751 890 13/2
ENVIRONMENTAL HEALTH LAB MCCLELLAN AFB CALIF
INITIAL AMBIENT AIR QUALITY SURVEY. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
OCT 68 28P DIAMOND, PHILIP LANDES,
RICHARD L. ;
REPT. NO. EHL-M-68M-52
PROJ: EHL-67-M-36

UNCLASSIFIED REPORT

DESCRIPTORS: (*MILITARY FACILITIES, *AIR POLLUTION),
(*EXHAUST GASES, AIR POLLUTION), CALIFORNIA, MONITORS,
JET AIRCRAFT, OXIDIZERS, HYDROCARBONS, PARTICLES,
MANPOWER, AIR FORCE (U)
IDENTIFIERS: MCCLELLAN AIR FORCE BASE, MILITARY AIR
FACILITIES, AIR QUALITY DATA, AIRCRAFT EXHAUST (U)

THE AMBIENT AIR QUALITY AT MCCLELLAN AIR
FORCE BASE, SACRAMENTO COUNTY, CALIFORNIA,
WAS MONITORED TO DETERMINE IF THE EXHAUST EMISSIONS
FROM JET AIRCRAFT AND ASSOCIATED INDUSTRIAL
OPERATIONS IN THE AREA WOULD PRODUCE SIGNIFICANTLY
HIGHER POLLUTION LEVELS THAN THOSE SHOWN BY THE
SACRAMENTO COUNTY AIR POLLUTION DIVISION
COMMUNITY DATA OVER THE SAME PERIOD. THE
APPLICABILITY OF SPECIFIC EQUIPMENT AND METHODS THAT
MIGHT BE USED FOR AMBIENT AIR QUALITY STUDIES, AND
THE MANPOWER REQUIREMENTS TO CONDUCT THIS TYPE OF
MONITORING PROGRAM. THE RESULTS OF THE STUDY
SHOWED THE LEVELS OF POLLUTANTS MEASURED AT THE
MCCLELLAN SAMPLING STATION WERE LOWER THAN THE
POLLUTANT LEVELS RECORDED AT THE SACRAMENTO COUNTY
SAMPLING STATIONS. CONCLUSIONS ARE PRESENTED FOR
THE FUTURE TYPE OF AIR POLLUTION RESEARCH AND
MONITORING THAT AIR FORCE FACILITIES SHOULD
UNDERTAKE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 768 144 7/1 13/2
ARMY MATERIEL COMMAND TEXARKANA TEX INTERN TRAINING
CENTER

HYDROCARBON RECOVERY FROM AUTOMOTIVE EXHAUST,

(U)

JUL 71 64P HAYS, GILBERT A. ;
REPT. NO. USAMC-ITC-2-71-05

UNCLASSIFIED REPORT

DESCRIPTORS: (*INTERNAL COMBUSTION ENGINES, EXHAUST
GASES), (*EXHAUST GASES, *PASSENGER VEHICLES), (*AIR
POLLUTION, INTERNAL COMBUSTION ENGINES), CATALYSTS,
NITROGEN OXIDES, CARBON MONOXIDE, RECOVERY (U)
IDENTIFIERS: *AIR POLLUTION CONTROL EQUIPMENT, SPARK
IGNITION ENGINES, *AUTOMOBILE EXHAUST, CATALYTIC
REACTORS (EXHAUST SYSTEMS) (U)

THE PAPER IS CONCERNED WITH THE AIR POLLUTION
PROBLEM AS IT RELATES TO THE OTTO-CYCLE ENGINE AND
THE VEHICLES POWERED BY THIS TYPE ENGINE.
SPECIFICALLY, THIS PAPER DEALS WITH THE CONTROL OF
THE THREE MAJOR AIR POLLUTANTS EMITTED BY THE
AUTOMOBILE. IT DISCUSSES THE AUTOMOBILE AS A SOURCE
OF POLLUTION AND THE EFFORTS THAT HAVE BEEN AND ARE
BEING MADE TO CONTROL THE EMISSION OF POLLUTANTS.
THE AUTHOR PROPOSES A NEW EXHAUST CONTROL SYSTEM
THAT IS BASED ON VIEWING THE POLLUTION PROBLEM AS A
WASTED RESOURCE PROBLEM AND DISCUSSES THE POSSIBLE
DIFFICULTIES THAT THE PROPOSED CONTROL SYSTEM WILL
ENCOUNTER. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 768 287 21/5 13/2 7/1
BRAUN (C F) AND CO ALHAMBRA CALIF

TURBOJET AIRCRAFT ENGINE TEST CELL
POLLUTION ABATEMENT STUDY. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUL-DEC 72,
JUN 73 93P DAVIES, GEORGE F. ; CROW,
RICHARD H. ;
CONTRACT: N62399-72-C-0020
PROJ: YF38.554
TASK: YF38.554.001
MONITOR: NCEL CR-74.001

UNCLASSIFIED REPORT

DESCRIPTORS: (*TURBOJET ENGINES, *AIR POLLUTION),
(*EXHAUST GASES, TURBOJET ENGINES), PARTICLES, CARBON
MONOXIDE, NITROGEN OXIDES, HYDROCARBONS, ALDEHYDES,
INCINERATORS, FLUID FILTERS, ELECTROSTATIC
PRECIPITATION, SEPARATION, TEST FACILITIES (U)
IDENTIFIERS: *AIR POLLUTION CONTROL EQUIPMENT, J-79
ENGINES, PERFORMANCE EVALUATION, SCRUBBERS, WET
METHODS, DRY METHODS, CYCLONE SEPARATORS, VENTURI
SEPARATORS, PACKED TOWER SCRUBBERS (U)

THE REPORT SUMMARIZES THE RESULTS OF A SURVEY AND
ANALYSIS OF THE APPLICATION OF CONVENTIONAL AIR
POLLUTANT ABATEMENT SYSTEMS TO THE EXHAUST GAS FROM
JET ENGINE TEST CELLS. THE FOLLOWING METHODS FOR
GAS TREATMENT WERE INVESTIGATED: WET SCRUBBERS,
INCINERATORS, ELECTROSTATIC PRECIPITATORS, FILTERS,
DRY INERTIAL COLLECTORS. THE LEAST COSTLY METHODS
FOR MEETING PRESENT EMISSION STANDARDS ARE WATER
SCRUBBING SYSTEMS. ONE OF THE MOST ATTRACTIVE OF
WET SCRUBBERS USING KOCH FLEXITRAYS IS DEVELOPED
IN DETAIL. THE REPORT COVERS THE ASSOCIATED PROBLEM
OF WATER SUPPLY AND DISPOSAL. THE REPORT ALSO
INCLUDES RESEARCH AND DEVELOPMENT SUGGESTIONS FOR
TEST CELL EMISSION CONTROL. (AUTHOR) (U)

UNCLASSIFIED

000M1

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 768 351 21/5 14/2 21/2
AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF
ENGINEERING

THE THEORY OF AN ELECTROSTATIC METAL-
PARTICLE SENSOR OPERATING IN A JET ENGINE
EXHAUST.

(U)

DESCRIPTIVE NOTE: MASTER'S THESIS,
JUN 73 73P LABO, JACK ALLEN ;
REPT. NO. GEP/PH/73-13

UNCLASSIFIED REPORT

DESCRIPTORS: (*PROBES(ELECTROMAGNETIC),
RELIABILITY(ELECTRONICS)), (*JET ENGINES, EXHAUST
GASES), (*EXHAUST GASES, PROBES(ELECTROMAGNETIC)),
PARTICLE SIZE, ELECTROSTATIC FIELDS, PLASMA SHEATHS,
CHARGED PARTICLES, THESES

(U)

AN ELECTROSTATIC PROBE IS STUDIED AS A CHARGED
METAL PARTICLE DETECTOR IN A JET ENGINE EXHAUST FROM
BOTH A THEORETICAL AND EXPERIMENTAL STANDPOINT.
THE THEORETICAL DEVELOPMENT CONCENTRATED ON THE
ELECTROSTATIC PARTICLE-PROBE INTERACTION PROBLEM.
THE MECHANISM BY WHICH A MOVING CHARGED PARTICLE
INDUCES A VOLTAGE PULSE IN A PROBE SENSING CIRCUIT IS
STUDIED AND A PRACTICAL MODEL FOR THE PARTICLE-PROBE
SYSTEM IS DEVELOPED AND THE RESULTING VOLTAGE PULSES
ARE EXPLAINED BY MEANS OF A CAPACITIVE EQUIVALENT
ELECTRICAL CIRCUIT. IN ORDER TO PREDICT THE VOLTAGE
PULSE WAVEFORM, THE CHANGING CAPACITANCE BETWEEN A
MOVING CHARGED PARTICLE AND AN ELECTROSTATIC PROBE IS
DETERMINED, AND THE PREDICTED VOLTAGE PULSE IS FOUND
TO DEPEND UPON THE PARTICLE CHARGE AND THE PROBE
SENSING CIRCUIT. THE INTERACTION OF AN UNCHARGED
PARTICLE WITH A BIASED PROBE AND THE JET ENGINE
EXHAUST PLASMA EFFECTS ARE BRIEFLY DISCUSSED.
(MODIFIED AUTHOR ABSTRACT)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 769 099 21/5 21/4 13/2
PHILLIPS PETROLEUM CO BARTLESVILLE OKLA RESEARCH AND
DEVELOPMENT DEPT

REDUCTION OF POLLUTANTS FROM AIRCRAFT TURBINE
BY FUEL SELECTION AND PREVAPORIZATION.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 14 SEP 72-14 JUN 73,
OCT 73 183P QUIGG, H. T. ;
REPT. NO. 6607-73
CONTRACT: N00140-72-C-6969

UNCLASSIFIED REPORT

DESCRIPTORS: (*GAS TURBINES, *EXHAUST GASES), (*AVIATION
FUELS, EXHAUST GASES), (*AIR POLLUTION, GAS TURBINES),
HYDROCARBONS, AROMATIC COMPOUNDS, ALKANES, HUMIDITY,
SMOKE, FLAMES, VAPORIZATION, OPERATION, CARBON
MONOXIDE
IDENTIFIERS: VOLATILITY, RADIANCE, JP-5 FUEL

(U)

(U)

AN INVESTIGATION WAS CONDUCTED, USING THE
PHILLIPS 2-INCH COMBUSTOR OPERATING UNDER
CONDITIONS SIMULATING THOSE IN MODERN AIRCRAFT
TURBINE ENGINES, TO PROVIDE INFORMATION ON THE
EFFECTS OF HYDROCARBON TYPE AND FUEL VOLATILITY ON
FLAME RADIANCE AND EXHAUST EMISSIONS. FUELS USED
IN THE INVESTIGATION WERE A JP-5 FOR REFERENCE AND
TEN PURE HYDROCARBONS (NORMAL, ISO-, AND
CYCLOPARAFFINS AND AROMATICS) WITH VARIOUS BOILING
POINTS WITHIN EACH HYDROCARBON TYPE. HYDROGEN
CONTENT OF THE FUELS RANGED FROM 7.7 TO 16.4 WEIGHT
PER CENT. THE EFFECTS OF DIFFERENCES IN PHYSICAL
PROPERTIES OF THE FUELS WERE MINIMIZED BY
PREVAPORIZATION BEFORE INTRODUCTION TO THE COMBUSTOR
AND MAXIMIZED BY USING PRESSURE ATOMIZATION FOR
INJECTION OF FUEL TO THE COMBUSTOR. INLET AIR
HUMIDITY WAS INCLUDED AS AN OPERATING VARIABLE.
EMPIRICAL EQUATIONS, BASED ON FUEL AND OPERATING
VARIABLES WERE DEVELOPED FOR PREDICTION OF FLAME
RADIANCE, NO, NOX, CO, AND SMOKE. (MODIFIED
AUTHOR ABSTRACT)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 769 278 13/2 4/1
ADVISORY GROUP FOR AERONAUTICAL RESEARCH AND DEVELOPMENT
PARIS (FRANCE)

ATMOSPHERIC POLLUTION BY AIRCRAFT
ENGINES.

(U)

DESCRIPTIVE NOTE: CONFERENCE PROCEEDINGS,
SEP 73 399P
REPT. NO. AGARD-CP-125

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED AT MEETING OF THE AGARD
PROPULSION AND ENERGETICS PANEL (41ST) LONDON,
9-13 APR 73. NATO FURNISHED.

DESCRIPTORS: (*AIR POLLUTION, *AIRCRAFT),
MEETINGS, NITROGEN OXIDES, OZONE, STRATOSPHERE,
REACTION KINETICS, SUPERSONIC TRANSPORTS,
AIRPORTS, EXHAUST GASES, COMBUSTION CHAMBERS,
GAS TURBINES

(U)

IDENTIFIERS: AIR POLLUTION CONTROL EQUIPMENT, AIR
POLLUTION ABATEMENT

(U)

AS PART OF THE GROWING CONCERN IN MANY DEVELOPED
COUNTRIES WITH QUESTIONS OF ECOLOGY AND ENVIRONMENT,
AIRCRAFT ARE BEING HEAVILY CRITICIZED AS CONTRIBUTING
A SIGNIFICANT SHARE OF POLLUTION. ALTHOUGH THE
MAJOR OBJECTION IS TO NOISE, OBJECTIONS ARE ALSO
RAISED CONCERNING SMOKE, FUMES, AND SMELLS ASCRIBED
TO AIRCRAFT. AS A RESULT, WORK IS IN PROGRESS TO
ASSESS THE IMPACT OF MILITARY AND CIVIL AVIATION ON
POLLUTION LEVELS BY DETERMINING THE NATURE AND
QUANTIFYING THE EXTENT OF AIRCRAFT PRODUCED POLLUTION
FOR COMPARISON WITH POLLUTION FROM OTHER SOURCES.
THE MAIN AREAS OF INTEREST INVOLVED IN THE MEETING
WERE: EFFECTS OF POLLUTION AT VERY HIGH ALTITUDES;
EFFECTS OF POLLUTION NEAR AIRPORTS; METHODS FOR
REDUCTION OF POLLUTANT PRODUCTION IN COMBUSTION
PROCESSES AND IN ENGINES. THEREFORE, THE MEETING
COVERED BOTH THE PROBLEM OF POLLUTION GENERATION,
ESPECIALLY RELATED TO NITRIC OXIDE, AND THE PROBLEM
OF DIFFUSION. IN ADDITION IT DISCUSSED SOME OF THE
EFFECTS OF THE PRODUCTION OF POLLUTANTS IN THE
ATMOSPHERE. THE MEETING INCLUDED A REVIEW OF
PHYSIOLOGICAL EFFECTS DUE TO POLLUTANTS.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 769 291 13/2
SCOTT RESEARCH LABS INC PLUMSTEADVILLE PA

A STUDY OF STACK EMISSIONS FROM COAST
GUARD CUTTERS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,
SEP 73 164P SOUZA, ANTHONY F. ;
CONTRACT: DOT-TSC-429
MONITOR: USCG, TSC D-13-73, USCG-73-1

UNCLASSIFIED REPORT

DESCRIPTORS: (*EXHAUST EMISSIONS, *BOATS),
(*COAST GUARD RESEARCH, EXHAUST EMISSIONS),
(*AIR POLLUTION, BOATS), POLLUTANTS,
HYDROCARBONS, DIESEL ENGINES, CARBON MONOXIDE,
CARBON DIOXIDE, PARTICULATES, SMOKE, NITROGEN
OXIDES, COMPUTER PROGRAMMING, SAMPLING
IDENTIFIERS: COAST GUARD CUTTERS

(U)

(U)

THE GASEOUS AND PARTICULATE EMISSIONS FROM 14
CUTTERS AND BOATS IN THE FIRST COAST GUARD
DISTRICT HAVE BEEN MEASURED UNDER TYPICAL OPERATING
CONDITIONS. THESE MEASUREMENTS WERE PERFORMED ON
57 DIESEL ENGINES AND BOILERS CONFIGURED AS MAIN
PROPULSION UNITS, SHIP-SERVICE GENERATORS AND HOTEL-
SERVICE BOILERS. THE DIESEL ENGINES VARIED IN SIZE
FROM TWO-CYLINDER, NATURALLY ASPIRATED, 35 H.P. UNITS
TO 3600 H.P. TURBO-CHARGED UNITS. THE GASEOUS
EMISSION CONCENTRATIONS MEASURED WERE CARBON
MONOXIDE, CARBON DIOXIDE, TOTAL HYDROCARBONS, AND
OXIDES OF NITROGEN. PARTICULATE EMISSION RATES BY
GRAVIMETRIC TECHNIQUE AS WELL AS SMOKE LEVELS WERE
ALSO DOCUMENTED. THESE MEASURED CONCENTRATIONS
WERE REDUCED TO MASS EMISSION NOTES BY APPROPRIATE
COMPUTER PROGRAMS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 769 455 13/2
TRANSPORTATION SYSTEMS CENTER CAMBRIDGE MASS

U.S. COAST GUARD POLLUTION ABATEMENT
PROGRAM: A PRELIMINARY REPORT ON THE
EMISSIONS TESTING OF BOAT DIESEL
ENGINES.

(U)

DESCRIPTIVE NOTE: INTERIM REPT.,
NOV 73 40P WALTER, ROBERT A. ;
REPT. NO. TSC-USCG-73-2
MONITOR: USCG D-21-74

UNCLASSIFIED REPORT

DESCRIPTORS: (*DIESEL ENGINES, *EXHAUST GASES),
(*MARINE ENGINES, *AIR POLLUTION), CARBON
MONOXIDE, CARBON DIOXIDE, HYDROCARBONS, NITROGEN
OXIDES, SMOKE, OXYGEN, AIR POLLUTION, GAS
ANALYSIS, COAST GUARD RESEARCH, TABLES(DATA),
DYNAMOMETERS, DYNAMIC TESTING

(U)

THE EXHAUST EMISSION CONCENTRATIONS FROM THREE
GM6-71'S AND A CUMMINS VT-350 DIESEL ENGINES
WERE MEASURED ON A DYNAMOMETER AS A FUNCTION OF
ENGINE LOAD. THE GM6-71 ENGINES WERE NEWLY
REBUILT BY THE COAST GUARD; THE CUMMINS
ENGINE WAS IN USED CONDITION. THESE ENGINES ARE
USED AS MAIN POWER UNITS IN COAST GUARD BOATS.
THE EXHAUST EMISSION CONCENTRATIONS WERE REDUCED TO
MASS EMISSIONS BY THE CARBON BALANCE TECHNIQUE.
SIMILAR EMISSION LEVELS WERE OBTAINED FROM THE
THREE REBUILT GM6-71 ENGINES WITH TYPE HV
INJECTORS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 769 482 13/2
AIR FORCE WEAPONS LAB KIRTLAND AFB N MEX

UNITED STATES AIR FORCE AIRCRAFT
POLLUTION EMISSIONS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 1 JAN-13 JUL 73,
NOV 73 51P NAUGLE, DENNIS F. ; DELANEY,
BERNARD T. ;
REPT. NO. AFWL-TR-73-199

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIRCRAFT ENGINES, *AIR POLLUTION),
(*JET ENGINES, AIR POLLUTION), MILITARY
AIRCRAFT, AIR FORCE EQUIPMENT, TEST METHODS,
EXHAUST GASES, NITROGEN OXIDES, CARBON MONOXIDE,
PARTICULATES, HYDROCARBONS, TABLES (DATA)

(U)

THE INTEREST IN POLLUTION EMISSIONS FROM AIRCRAFT
HAS BEEN ENHANCED BY ENVIRONMENTAL PROTECTION
AGENCY'S RECENT DETERMINATION THAT MAJOR CIVILIAN
AIRPORTS ARE SIGNIFICANT CONTRIBUTORS TO LOCALIZED
AIR-QUALITY DEGRADATION. THIS REPORT SUMMARIZES
THE USAF AIRCRAFT AND ENGINES IN COMMON USE,
PRESENTS NORMALIZED ENGINE POLLUTION EMISSION FACTORS
(EMISSION INDICES), REVIEWS DEFICIENCIES IN
PRESENT EMISSION DATA, AND RECOMMENDS FUTURE EFFORTS
TO BETTER ANALYZE AIRCRAFT EMISSIONS. PRIMARY
GOALS OF IMPACT ASSESSMENTS AT MANY LOCATIONS AND TO
STIMULATE COMMENT ON THE DIRECTION OF FUTURE USAF
EFFORTS CONCERNING THE RECOMMENDED PROJECTS.
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 769 655 13/2
OFFICE OF NAVAL RESEARCH LONDON (ENGLAND)

ATMOSPHERIC POLLUTION BY AIRCRAFT
ENGINES.

(U)

DESCRIPTIVE NOTE: CONFERENCE REPT.,
AUG 73 23P MELLOR, A. M. ; ROBERTS,
RALPH ;
REPT. NO. ONRL-C-17-73

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIRCRAFT ENGINES, *AIR POLLUTION),
EXHAUST GASES, MEETINGS, NITROGEN OXIDES, UPPER
ATMOSPHERE, REACTION KINETICS, PHOTOCHEMICAL
REACTIONS, CHEMICAL REACTIONS, GAS TURBINES,
CARBON MONOXIDE, HYDROCARBONS, OZONE, TEST
METHODS, GREAT BRITAIN

(U)

IDENTIFIERS: *AIR POLLUTION CONTROL

(U)

THE REPORT SUMMARIZES PAPERS DELIVERED AT A MEETING
ON THE EFFECT OF CHEMICAL AIR POLLUTION BY AIRCRAFT
AT VERY HIGH ALTITUDES AND NEAR AIRPORTS. ALSO
DISCUSSED ARE ENGINEERING TECHNIQUES FOR REDUCING
POLLUTANT PRODUCTION IN COMBUSTION IN AIRCRAFT
ENGINES. BOTH THE PROBLEMS OF POLLUTION GENERATION
AS WELL AS DIFFUSION WERE DISCUSSED. (MODIFIED
AUTHOR ABSTRACT)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 770 016 13/2 4/1 4/2
AIR FORCE CAMBRIDGE RESEARCH LABS L G HANSCOM FIELD
MASS

ENVIRONMENTAL IMPACT OF B-1 EMISSIONS IN THE
STRATOSPHERE. (U)

DESCRIPTIVE NOTE: AIR FORCE SURVEYS IN GEOPHYSICS,
OCT 73 35P STERGIS, C. G. ;
REPT. NO. AFCRL-AFSG-275, AFCRL-TR-73-0608
PROJ: AF-8605
TASK: 860508

UNCLASSIFIED REPORT

DESCRIPTORS: (*JET BOMBERS, *EXHAUST GASES),
(*AIR POLLUTION, JET BOMBERS), (*STRATOSPHERE,
AIR POLLUTION), NITROGEN OXIDES, HYDROCARBONS,
OZONE, CHEMICAL REACTIONS, PHOTOCHEMICAL
REACTIONS, CATALYSIS, ULTRAVIOLET RADIATION,
PARTICULATES, CARBON MONOXIDE, CARBON DIOXIDE,
SULFUR OXIDES, ABSORPTION(PHYSICAL), CLIMATE,
INFRARED RADIATION, WEATHER MODIFICATION (U)
IDENTIFIERS: B-1 AIRCRAFT (U)

THIS IS A COMPENDIUM OF THREE PAPERS AIMED AT THE
QUESTION 'WHAT WILL BE THE ENVIRONMENTAL IMPACT OF
A FLEET OF B-1 AIRCRAFT FLYING IN THE
STRATOSPHERE.' THE THREE PAPERS ARE: (1)
EFFECTS OF THE B-1 ON OZONE AND ON
TRANSMITTED UV; (2) VISIBLE AND INFRARED
EFFECTS OF MOLECULAR AND PARTICULATE B-1
EMISSIONS; AND (3) ASSESSMENT OF THE IMPACT
OF THE B-1 EXHAUST EMISSIONS ON LOCAL AND
GLOBAL CHANGES IN WEATHER. (AUTHOR) (U)

UNCLASSIFIED

000M1

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 771 710 13/3
DEFENSE DOCUMENTATION CENTER ALEXANDRIA VA

ENVIRONMENTAL POLLUTION: AIR POLLUTION -
EXHAUST GASES.

(U)

DESCRIPTIVE NOTE: REPORT BIBLIOGRAPHY JAN 71-JUL 73.
DEC 73 94P
REPT. NO. DDC-TAS-73-77

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR POLLUTION, *EXHAUST GASES,
*BIBLIOGRAPHIES, ABATEMENT, CARBON MONOXIDE,
NITROGEN OXIDES, HYDROCARBONS, WASTE GASES,
PASSENGER VEHICLES, AIRCRAFT, SUPERSONIC
TRANSPORTS, JET ENGINES, TURBOJET ENGINES,
AIRCRAFT ENGINES, JET ENGINES, INTERNAL COMBUSTION
ENGINES, GAS DETECTORS, AVIATION FUELS, FUEL
ADDITIVES, JET ENGINE FUELS, TOXICITY

(U)

THE BIBLIOGRAPHY COMPRISES CITATIONS OF
UNCLASSIFIED REPORTS DEALING WITH EXHAUST GASES IN A
SERIES OF BIBLIOGRAPHIES ON AIR POLLUTION. TOPICS
DISCUSSED INCLUDE AIR POLLUTION FROM EXHAUST GASES
EMANATING FROM GROUND AND AIR TRANSPORTATION.
THERE ARE ALSO INCLUDED SOME REFERENCES TO EXHAUST
SYSTEMS OF JET ENGINES, HELICOPTERS, TURBOJET
ENGINES, AND ROCKET MOTORS. CORPORATE AUTHOR-
MONITORING AGENCY, SUBJECT, TITLE, PERSONAL
AUTHOR, CONTRACT, AND REPORT NUMBER INDEXES
ARE INCLUDED. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 773 717 7/4 13/2
FRANKLIN INST RESEARCH LABS PHILADELPHIA PA

DETECTION OF VEHICLE EXHAUST/PETROLEUM
VAPORS. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT.,
MAR 71 37P SCHAFFER, MARGARET ;
REPT. NO. FIRL-F-C2200-32
CONTRACT: DAAD05-68-C-0283
PROJ: LWL-05-PA-70
MONITOR: LWL CR-05PA70

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR POLLUTION, *HYDROCARBONS,
INFRARED SPECTROSCOPY, GAS ANALYSIS, SULFUR
OXIDES, NITROGEN OXIDES, CARBON MONOXIDE, CARBON
DIOXIDE, MASS SPECTROSCOPY, FLAMES, DETECTORS,
IONIZATION, SPECTROMETERS, EXHAUST GASES,
REVIEWS (U)

IDENTIFIERS: SULFUR DIOXIDE, *AIR POLLUTION
DETECTION, FLAME IONIZATION DETECTORS (U)

THE REPORT DESCRIBES THE RESULTS OF A LITERATURE
SEARCH AND INVESTIGATION TO DETERMINE (A) THE
TRACE QUANTITIES OF VEHICLE EXHAUST PRODUCTS
(INCLUDING FUEL ADDITIVES) PRESENT IN THE
ATMOSPHERE NEAR VEHICLES AND (B) HYDROCARBON AND
PETROLEUM VAPORS IN THE ATMOSPHERE DUE TO ANY SOURCE.
THE OBJECT OF THE STUDY WAS TO DETERMINE SPECIFIC
COMPOUNDS PRESENT, THE QUANTITIES PRESENT, TECHNIQUES
FOR DETECTING THESE TRACE COMPOUNDS AND EQUIPMENT
PRESENTLY COMMERCIALY AVAILABLE FOR THIS PURPOSE.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 773 766 6/20
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB
OHIO

PROCEEDINGS OF THE ANNUAL CONFERENCE ON
ENVIRONMENTAL TOXICOLOGY (3RD) HELD IN
FAIRBORN, OHIO, ON 25-27 OCTOBER 1972,

(U)

DEC 72 356P
REPT. NO. AMRL-TR-72-130
PROJ: AF-6302
TASK: 630201

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO ANNUAL CONFERENCE NO. 2,
AD-746 660.

DESCRIPTORS: *TOXICITY, *SYMPOSIA, *HALOGENATED
HYDROCARBONS, *AIR POLLUTION, *PROPELLANTS, FIRE
EXTINGUISHING AGENTS, EXPOSURE (PHYSIOLOGY),
PATHOLOGY, ELECTRON MICROSCOPY, GAS
CHROMATOGRAPHY

(U)

THE REPORT IS A COMPILATION OF THE PAPERS PRESENTED
AT THE PROCEEDINGS OF THE 3RD ANNUAL CONFERENCE
ON ENVIRONMENTAL TOXICOLOGY, SPONSORED BY THE
SYSTEMED CORPORATION AND HELD IN FAIRBORN,
OHIO ON 25, 26, AND 27 OCTOBER 1972. MAJOR
TECHNICAL AREAS DISCUSSED INCLUDED BIOLOGIC THRESHOLD
LIMITS; TOXICOLOGY OF HALOGENATED SOLVENTS, AEROSOL
PROPELLANTS, AND FIRE EXTINGUISHANTS; AND PYROLYSIS
AND ROCKET EXHAUST PRODUCTS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 774 673 21/4
BUREAU OF MINES BARTLESVILLE OKLA BARTLESVILLE ENERGY
RESEARCH CENTER

ANALYSIS OF AVIATION GAS TURBINE
FUELS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,
DEC 73 14P HURN, R. W. ;
CONTRACT: DOT-AS-20058
MONITOR: FAA-RD 73-189

UNCLASSIFIED REPORT

DESCRIPTORS: *AVIATION FUELS, *TRACE ELEMENTS,
*AIR POLLUTION, EXHAUST GASES, GAS TURBINES,
OXYGEN, CARBON DIOXIDE, CARBON MONOXIDE,
METHANE, HYDROCARBONS, NITROGEN OXIDES, METALS,
FORMALDEHYDE, ALDEHYDES, ALUMINUM, BARIUM,
CALCIUM, CADMIUM, VANADIUM, COPPER, IRON,
LEAD(METAL), POTASSIUM, MANGANESE,
MAGNESIUM, SODIUM, ZINC

(U)

IDENTIFIERS: *AIRCRAFT EXHAUST

(U)

EXPERIMENTAL WORK WAS DONE TO DETERMINE FOR
AVIATION TURBINE FUELS THE TRACE COMPONENTS THAT
COULD BE SOURCE MATERIAL OF ATMOSPHERIC POLLUTANT.
DATA WERE OBTAINED ON BOTH U.S. AND EUROPEAN
AREA FUELS. OTHER ANALYTICAL DATA WERE OBTAINED
FOR TURBINE EXHAUST GASES AND, CONCURRENTLY, ON THE
FUELS USED IN PRODUCING THE EXHAUST. THE OBJECTIVE
IN THE ENGINE EXHAUST STUDY WAS TO CORRELATE, IF
POSSIBLE, THE PRESENCE OF FUEL TRACE COMPONENTS AND
THE APPEARANCE OF SUCH COMPONENTS IN THE AIRCRAFT
EMISSIONS. RESULTS OF THE STUDY, WHICH TOO-LIMITED
TO BE DEFINITIVE, NONETHELESS SUGGEST THAT TRACE
ELEMENTS OF FUELS CAN BE CONTROLLED AT LEVELS SUCH
THAT THE FUEL IS NOT SIGNIFICANT AS A SOURCE OF THOSE
ELEMENTS AS AIRCRAFT EMISSIONS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 775 094 21/5 21/2 13/2
CALIFORNIA UNIV BERKELEY DEPT OF MECHANICAL
ENGINEERING

FACTORS CONTROLLING POLLUTANT EMISSIONS FROM
GAS TURBINE ENGINES,

(U)

74 15P SAWYER, ROBERT F. ; CERNANSKY,
NICHOLAS P. ; OPPENHEIM, ANTONI K. ;
CONTRACT: AF-AFOSR-2299-72, AF-AFOSR-2200-72
PROJ: AF-9750
TASK: 975002
MONITOR: AFOSR TR-74-0192

UNCLASSIFIED REPORT

DESCRIPTORS: *GAS TURBINES, *AIR POLLUTION, SMOKE,
ALDEHYDES, HYDROCARBONS, COMBUSTION, EXHAUST
GASES, AIRCRAFT ENGINES, CARBON MONOXIDE,
PARTICULATES, NITROGEN OXIDES, OPERATION

(U)

PRIMARY POLLUTANTS EMITTED BY AIRCRAFT GAS TURBINE
ENGINES ARE CARBON MONOXIDE, HYDROCARBONS, ALDEHYDES,
SMOKE, PARTICULATES, AND NITRIC OXIDE. FACTORS
CONTROLLING EMISSIONS OF THESE POLLUTANTS ARE
ANALYZED ON THE BASIS OF AIRCRAFT ENGINE EXHAUST
COMPOSITION AND LABORATORY STUDIES OF GAS TURBINE
COMBUSTION PROCESSES. MOREOVER, AN ANALYTICAL
PREDICTION OF THE EFFECT OF AIRCRAFT OPERATING
PARAMETERS ON THE EMISSION OF NITRIC OXIDE IS ALSO
GIVEN. OPERATIONAL CONDITIONS AND ENGINE
PARAMETERS SUCH AS AMBIENT TEMPERATURE, PRESSURE, AND
HUMIDITY, FLIGHT ALTITUDE, FLIGHT MACH NUMBER,
WATER INJECTION, FUEL PROPERTIES, AND COMBUSTOR
CHARACTERISTICS HAVE BEEN STUDIED ANALYTICALLY,
YIELDING RATIONAL CRITERIA FOR THE PREDICTION OF
THEIR EFFECT ON THE EMISSION OF NITRIC OXIDE.
(MODIFIED AUTHOR ABSTRACT)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 778 769 21/5 13/2 21/2
AVCO LYCOMING DIV STRATFORD CONN

T53 AND T55 GAS TURBINE COMBUSTOR AND
ENGINE EXHAUST EMISSION MEASUREMENTS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 72-FEB 73,
DEC 73 222P RUBINS, PHILIP M. ; DOYLE,
BRIAN W. ;
REPT. NO. LYC-73-8
CONTRACT: DAAJ02-72-C-0102
PROJ: DA-1-G-162207-AA-71
TASK: 1-G-162207-AA-7102
MONITOR: USAAMRDL TR-73-47

UNCLASSIFIED REPORT

DESCRIPTORS: *GAS TURBINES, *EXHAUST GASES, SMOKE,
HYDROCARBONS, COMBUSTION CHAMBERS, CARBON
MONOXIDE, NITROGEN OXIDES, CARBON DIOXIDE,
PROFILES, AIR POLLUTION, GAS ANALYSIS, POWER,
LABORATORY TESTS, PERFORMANCE(ENGINEERING)

(U)

IDENTIFIERS: T-53 ENGINES, T-55 ENGINES, T-53-
L-13-A ENGINES, T-55-L-11A ENGINES, AIR
FUEL RATIO, COMBUSTION EFFICIENCY

(U)

THE PURPOSE OF THE PRESENT TESTS WAS TO EVALUATE
GAS TURBINE ENGINES AND COMBUSTORS FROM A POLLUTANT
STANDPOINT AND COMPARE THE RESULTS WITH THE CURRENT
STATE OF THE ART. EXTENSIVE TESTS WERE MADE TO
DETERMINE THE GASEOUS EXHAUST EMISSION
CHARACTERISTICS OF BOTH A T53-L-13A AND A
T55-L-11A LYCOMING GAS TURBINE ENGINE. IN
ADDITION, THE COMBUSTOR FOR EACH ENGINE WAS TESTED
SEPARATELY UNDER LABORATORY CONDITIONS SIMULATING
ENGINE OPERATION, WITH SIMILAR MEASUREMENTS OF
GASEOUS EMISSIONS. DATA WERE ANALYZED FOR THE FULL
RANGE OF ENGINE POWER OPERATION FOR CO,
HYDROCARBONS, NO, NOX, AND CO2, AND FOR SMOKE.
SAMPLES WERE TAKEN WITH SIX-POINT TRAVERSING
PROBES, WITH A SINGLE-POINT TRAVERSING PROBE, AND
WITH MULTIORIFICE AVERAGING-TYPE PROBES. EXTENSIVE
PROFILE DATA PLOTTED ALONG DIAMETERS OF THE ENGINE
EXHAUST, AROUND THE CIRCUMFERENCE OF THE COMBUSTOR
EXIT PLANE, AND AS ISOPLETH MAPS ARE PRESENTED.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 778 938 13/2 7/4
MONSANTO RESEARCH CORP DAYTON OHIO DAYTON LAB

AN ASSESSMENT OF INSTRUMENTATION AND MONITORING
NEEDS FOR SIGNIFICANT AIR POLLUTANTS
EMITTED BY AIR FORCE OPERATIONS AND
RECOMMENDATIONS FOR FUTURE RESEARCH ON
ANALYSIS OF POLLUTANTS. (U)

DESCRIPTIVE NOTE: INTERIM TECHNICAL REPT. 1 DEC 72-31
JAN 74,

FEB 74 184P PARTS, LEO ; PUSTINGER, JOHN
V. ; ROSS, WILLIAM D. ; SNYDER, ARTHUR D. ; YU,
HENRY H. S. ;

CONTRACT: F33615-72-C-1304

PROJ: AF-7023

TASK: 702304

MONITOR: ARL TR-74-0015

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR POLLUTION, *MONITORING, *AIR
FORCE OPERATIONS, ODORS, PARTICULATES, EXHAUST
GASES, METALS, ROCKET EXHAUST, HERBICIDES,
INCINERATORS, GAS ANALYSIS, ORGANIC COMPOUNDS,
CHEMICAL ANALYSIS, MEASURING INSTRUMENTS (U)
IDENTIFIERS: AIRCRAFT EXHAUST, AIR POLLUTION
DETECTION, AUTOMOBILE EXHAUST (U)

RELIABLE MONITORING TECHNOLOGY IS REQUIRED TO
CONTROL NOXIOUS EFFLUENTS ARISING FROM AIR
FORCE'S OPERATIONS. PRESENT AND PROJECTED
MONITORING NEEDS HAVE BEEN ESTABLISHED. PRESENTLY
USED MONITORING TECHNIQUES ARE DISCUSSED. RESEARCH
AND DEVELOPMENT ACTIVITIES IN GOVERNMENTAL,
INDUSTRIAL, AND EDUCATIONAL ORGANIZATIONS, RELEVANT
TO AIR FORCE'S MONITORING NEEDS, HAVE BEEN
IDENTIFIED. RECOMMENDATIONS REGARDING INSTRUMENT
DEVELOPMENT, TO MEET THE EXISTING AND FORESEEABLE
REQUIREMENTS, ARE PRESENTED IN THE FOLLOWING AREAS:
VOLATILE AIRCRAFT EMISSIONS, PARTICULATE AIRCRAFT
EMISSIONS, MISSILE-RELATED SUBSTANCES, METALLIC
ELEMENT EMISSION SOURCES, HERBICIDE DISPOSAL
OPERATIONS, AMBIENT AIR, AND SPECIAL MONITORING
NEEDS. GENERAL RECOMMENDATIONS SPECIFY AREAS IN
WHICH FUNDAMENTAL RESEARCH IS OF VITAL IMPORTANCE.
(MODIFIED AUTHOR ABSTRACT) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 779 150 13/2 4/2 20/4 1/2
ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT
PARIS (FRANCE)

THE FLUID DYNAMICS ASPECTS OF AIR
POLLUTION RELATED TO AIRCRAFT OPERATIONS,

(U)

FEB 74 53P LIBBY, PAUL A. ;
REPT. NO. AGARD-AR-55

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: NATO FURNISHED.

DESCRIPTORS: *AIR POLLUTION, *AIRCRAFT, PLUMES,
AIRPORTS, UPPER ATMOSPHERE, ATMOSPHERIC MOTION,
EXHAUST GASES, DISPERSING, OPERATION, MASS
TRANSFER, SMOKE, MEETINGS

(U)

IDENTIFIERS: *AIRCRAFT EXHAUST, ATMOSPHERIC
DIFFUSION, JET ENGINE EXHAUST

(U)

THE REPORT GIVES AN OVERVIEW OF TECHNICAL PROBLEMS
AND ACTIVITIES IN THE NATO COUNTRIES RELATED TO
THEIR STUDY IN THE FIELD OF AIR POLLUTION WITH
SPECIAL EMPHASIS ON AIRCRAFT OPERATIONS. CHAPTER
TITLES INCLUDE THE DISPERSION OF POLLUTANTS FROM
AIRCRAFT; AIR POLLUTION CHARACTERISTICS OF AIRCRAFT
ENGINES; RESEARCH IN GERMANY ON FLUID DYNAMICS OF
AIR POLLUTION RELATED TO AIRCRAFT OPERATIONS;
PRELIMINARY NOTES ON LARGE SCALE MASS TRANSPORT; AIR
POLLUTION FROM AIRCRAFT.

(U)

UNCLASSIFIED

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 779 551 4/2 13/2
BATTELLE PACIFIC NORTHWEST LABS RICHLAND WASH ATMOSPHERIC
SCIENCES DEPT

PRECIPITATION SCAVENGING OF ORGANIC
CONTAMINANTS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,
APR 74 105P HALES, JEREMY M. ; LEE,
RICHARD N. ;
CONTRACT: DAHC04-72-C-0035
PROJ: AROD-P-10417-EN
MONITOR: AROD 10417.1-EN

UNCLASSIFIED REPORT

DESCRIPTORS: *ORGANIC COMPOUNDS, *AIR POLLUTION,
SOLUBILITY, VAPORS, ATMOSPHERIC PRECIPITATION,
CONTAMINANTS, TRACER STUDIES, COMPUTERIZED
SIMULATION, MATHEMATICAL MODELS, ATMOSPHERIC
DIFFUSION, PLUMES, COMPUTER PROGRAMS
IDENTIFIERS: *ACETOACETIC ACID/(ETHYL-ESTER),
*DIETHYLAMINE, *PRECIPITATION WASHOUT

(U)

(U)

THE EPAEC GAS WASHOUT MODEL HAS BEEN APPLIED TO
THE ORGANIC TRACERS ETHYLACETOACETATE AND
DIETHYLAMINE. THIS MODEL USES SOURCE STRENGTH,
VAPOR SOLUBILITY AND BASIC METEOROLOGICAL PARAMETERS
TO ESTIMATE THE TRACER CONCENTRATION IN DOWNWIND RAIN
SAMPLES. A DETAILED ERROR ANALYSIS HAS IDENTIFIED
POORLY DEFINED TRACER SOLUBILITY AS THE MAJOR SOURCE
OF MEASURED DISCREPANCY WITH PREDICTIONS. FIELD
RESULTS HAVE ALSO BEEN USED TO CALCULATE THE
FRACTIONAL WASHOUT OF THE VAPOR PER KILOMETER FROM
THE SOURCE. THE RESULTS TOGETHER WITH EXISTING
DIFFUSION MODELS MAY BE USED TO ESTIMATE THE VAPOR
CONCENTRATIONS OF THESE MATERIALS ALONG A PLUME
TRAJECTORY. (MODIFIED AUTHOR ABSTRACT)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 779 786 21/5 13/2
PRATT AND WHITNEY AIRCRAFT WEST PALM BEACH FLA

LOW-POWER TURBOPROPULSION COMBUSTOR EXHAUST
EMISSIONS. VOLUME II. DEMONSTRATION AND
TOTAL EMISSION ANALYSIS AND PREDICTION.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 1 DEC 72-28
FEB 74,

APR 74 230P MOSIER, STANLEY A. ; ROBERTS,
RICHARD ;
REPT. NO. PWA-FR-6098
CONTRACT: F33615-71-C-1870
PROJ: AF-3066
TASK: 306605
MONITOR: AFAPL TR-73-36-VOL-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 1, AD-762 935.

DESCRIPTORS: *EXHAUST GASES, *GAS TURBINES, *AIR
POLLUTION, TURBOFAN ENGINES, HYDROCARBONS, CARBON
MONOXIDE, COMBUSTION CHAMBERS, MATHEMATICAL MODELS,
GAS ANALYSIS, SMOKE ABATEMENT, PREDICTIONS, TEST
METHODS, PRESSURE
IDENTIFIERS: DESIGN, AIR POLLUTION CONTROL, GAS
SAMPLING, JT8D ENGINES

(U)

(U)

AN EXPLORATORY DEVELOPMENT PROGRAM WAS CONDUCTED TO
IDENTIFY, EVALUATE, AND DEMONSTRATE IMPROVED
COMBUSTION DESIGN TECHNIQUES FOR INCREASING
COMBUSTION EFFICIENCY AT PART-POWER OPERATING
CONDITIONS, THEREBY REDUCING UNDESIRABLE AND
POTENTIALLY HAZARDOUS EXHAUST EMISSIONS. THE MOST
PROMISING OF THE LOW-POWER DESIGN TECHNIQUES
INVESTIGATED, FUEL-AIR PREMIXING AND VIRTUAL STAGING,
WERE INCORPORATED INTO AN ANNULAR BURNER
CONFIGURATION AND A DETAILED EXPERIMENTAL EVALUATION
OF THE COMBUSTION SYSTEM WAS ACCOMPLISHED. THE
BURNER WAS EXAMINED AT BOTH LOW-POWER AND SIMULATED
DESIGN-POINT OPERATING CONDITIONS. RELATIVE TO THE
PART-POWER GOALS THAT SERVED AS GUIDELINES FOR THE
DEMONSTRATION HARDWARE, VIZ. A SMOKE NUMBER LESS
THAN 20, CARBON MONOXIDE CONCENTRATION OF 10 PPMW,
TOTAL UNBURNED HYDROCARBON CONCENTRATION OF 10 PPMW,
AND COMBUSTION EFFICIENCY GREATER THAN 98%, THOSE
RELATING TO SMOKE, HYDROCARBON CONCENTRATION, AND
EFFICIENCY WERE EXCEEDED; THAT RELATING TO CARBON
MONOXIDE CONCENTRATION WAS APPROACHED.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 780 049 13/2 1/5 1/2
ARGONNE NATIONAL LAB ILL ENERGY AND ENVIRONMENTAL SYSTEMS
DIV

AIRPORT VICINITY AIR POLLUTION STUDY. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
DEC 73 295P ROTE, D. M. ; HECHT, R. W.
; WANG, I. T. ; CIRILLO, R. R. ; WANGEN, L. E.

CONTRACT: DOT-FA71WAI-223
MONITOR: FAA-RD 73-113

UNCLASSIFIED REPORT

DESCRIPTORS: *AIRPORTS, *AIR QUALITY, *AIR
POLLUTION, FLOW CHARTING, COMPUTERIZED SIMULATION,
AIRCRAFT, DISPERSING, DATA ACQUISITION,
ATMOSPHERIC MOTION, HYDROCARBONS, NITROGEN OXIDES,
PARTICULATES, CARBON MONOXIDE, COMMERCIAL
AVIATION, CIVIL AVIATION, OPERATION, ILLINOIS,
CALIFORNIA (U)

IDENTIFIERS: ATMOSPHERIC DIFFUSION, AIRCRAFT
EXHAUST, AIR QUALITY DATA, AIR QUALITY MONITORING,
CHICAGO(ILLINOIS), LOS
ANGELES(CALIFORNIA) (U)

THE REPORT DESCRIBES THE DEVELOPMENT OF A COMPUTER
MODEL THAT CAN BE USED TO DETERMINE THE IMPACT OF AN
EXISTING OR PLANNED AIRPORT ON THE AIR QUALITY IN ITS
VICINITY. THE MODEL DEVELOPMENT WAS SUPPORTED BY
AN AIR QUALITY MONITORING AND EMISSION ACTIVITY DATA
ACQUISITION PROGRAM. O'HARE INTERNATIONAL
AIRPORT, CHICAGO, ILLINOIS, AND ORANGE
COUNTY AIRPORT, LOS ANGELES, CALIFORNIA WAS
SELECTED AS TEST SITES, EACH BEING REPRESENTATIVE OF
A PREDOMINANTLY COMMERCIAL AIRPORT AND A
PREDOMINANTLY GENERAL AVIATION REPORT, RESPECTIVELY.
THE ACTIVITY SIMULATION AND AIR QUALITY MODEL ARE
DISCUSSED. RESULTS OF THE COMPUTATIONS OF AIR
QUALITY CONCENTRATIONS AND COMPARISONS WITH
OBSERVATIONS ARE PRESENTED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 781 762 21/2 21/5 13/2
AIR FORCE AERO PROPULSION LAB WRIGHT-PATTERSON AFB
OHIO

PRELIMINARY STUDY OF THE CATALYTIC COMBUSTOR
CONCEPT AS APPLIED TO AIRCRAFT GAS
TURBINES.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JAN 72-FEB 74,
MAY 74 65P BLAZOWSKI, WILLIAM S. ;
BRESOWAR, GERALD E. ;
REPT. NO. AFAPL-TR-74-32
PROJ: AF-3048
TASK: 304805

UNCLASSIFIED REPORT

DESCRIPTORS: *COMBUSTION CHAMBERS, *GAS TURBINES,
*AIR POLLUTION, *EXHAUST GASES, EMISSION,
NITROGEN OXIDES, COMBUSTION, CATALYSIS
IDENTIFIERS: *AIR POLLUTION CONTROL, JP-4
FUEL

(U)

(U)

THE INVESTIGATION WAS INTENDED TO STUDY THE
FEASIBILITY OF USING SOLID CATALYTIC BEDS IN THE
REACTION ZONE OF AIRCRAFT GAS TURBINE COMBUSTORS.
SINCE THE CATALYTIC COMBUSTOR OPERATES AT LOW-
EQUIVALENCE RATIOS THROUGHOUT (THERE IS NO NEAR-
STOICHIOMETRIC OPERATION AS IN MOST CONVENTIONAL
COMBUSTORS), OXIDE OF NITROGEN EMISSIONS WERE
FORECAST TO BE EXTREMELY LOW. JP-4 FUEL WAS USED
THROUGHOUT THE EXPERIMENTAL TEST PROGRAM. FLASHBACK
AND PREIGNITION WERE OBSERVED AND THE FUEL
INTRODUCTION SYSTEM DEVELOPED TO PARTIALLY OVERCOME
THESE PROBLEMS IS DESCRIBED. AT ALL OPERATING
CONDITIONS TESTED, NOX CONCENTRATION WAS TO BE
BELOW 2 PPMV -- TWO ORDERS OF MAGNITUDE BELOW THAT
EXPECTED FROM A CONVENTIONAL COMBUSTOR OPERATED UNDER
SIMILAR INLET AND EXHAUST CONDITIONS. NO REDUCTION
IN PERFORMANCE WAS NOTED OVER THE 28 HOURS OF TEST
OPERATION. (MODIFIED AUTHOR ABSTRACT)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 783 828 13/2 21/5 15/7
AIR FORCE AERO PROPULSION LAB WRIGHT-PATTERSON AFB
OHIO

AIRCRAFT EXHAUST POLLUTION AND ITS EFFECT
ON THE U.S. AIR FORCE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
AUG 74 134P BLAZOWSKI, WILLIAM S. ;
HENDERSON, ROBERT E. ;
REPT. NO. AFAPL-TR-74-64

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REVISION OF REPORT DATED NOV 72,
AD-753 095.

DESCRIPTORS: *AIR POLLUTION, *AIRCRAFT ENGINES,
*AIR FORCE, REVIEWS, MILITARY REQUIREMENTS,
COMBUSTION CHAMBERS, AFTERBURNING, EXHAUST GASES,
COSTS, SMOKE, NITROGEN OXIDES, HYDROCARBONS,
CARBON MONOXIDE

(U)

IDENTIFIERS: *AIRCRAFT EXHAUST, *AIR POLLUTION
CONTROL, AIR POLLUTION STANDARDS, JET ENGINE
EXHAUST

(U)

THE REPORT PRESENTS INFORMATION THOUGHT TO BE
NECESSARY IN ESTABLISHING AN AIR FORCE POLICY
ON AIRCRAFT ENGINE POLLUTION. THE REASONS THAT
DIFFERENT POLLUTANTS ARE EMITTED IS DISCUSSED.
RELEVANCE OF THIS PROBLEM TO THE AIR FORCE IS
ALSO INVESTIGATED. ACTIONS WHICH MAY BE TAKEN TO
REDUCE POLLUTANTS ARE PRESENTED IN TERMS OF
TECHNOLOGY LEVEL: CURRENT, MID-TERM, AND ADVANCED
TECHNOLOGY. OPERATION, RELIABILITY AND
MAINTAINABILITY, IMPLEMENTATION AND COST IMPACTS ARE
EVALUATED FOR EACH OF THE TECHNOLOGY LEVELS. THE
EPA STANDARDS AND POSSIBLE USE BY THE AIR FORCE
ARE DISCUSSED. AIR FORCE GOALS, WHICH DIFFER FROM
THE EPA STANDARDS IN METHOD OF SPECIFICATION, ARE
DEVELOPED. THESE GOALS WILL PERMIT CONTROL
TECHNOLOGY APPLICATION WITHOUT INFLUENCING BASIC
ENGINE DESIGN PARAMETERS OR PERFORMANCE. THE COST
TO MEET THESE GOALS IS ESTABLISHED FOR CURRENT AF
SYSTEMS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 784 026 7/4 14/2 13/2
ARMY MATERIEL COMMAND TEXARKANA TEX INTERN TRAINING
CENTER

THE SURVEY AND DEVELOPMENT OF EQUIPMENT AND
TECHNIQUES CAPABLE OF MONITORING AUTOMOTIVE
EXHAUST EMISSIONS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,
MAR 73 141P REEVES, ALTON DOUGLAS ;
REPT. NO. USAMC-ITC-2-73-18

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: *GAS DETECTORS, *EXHAUST GASES,
*MONITORS, *GAS ANALYSIS, *CARBON MONOXIDE, GAS
CHROMATOGRAPHY, SAMPLERS, TEST METHODS,
COLORIMETRIC ANALYSIS, CALIBRATION, HYDROCARBONS,
NITROGEN OXIDES, REVIEWS,

PERFORMANCE (ENGINEERING), AUTOMOTIVE VEHICLES
IDENTIFIERS: *AUTOMOBILE EXHAUST, AIR POLLUTION
CONTROL EQUIPMENT, SPECTROSCOPIC ANALYSIS,
NONDISPERSIVE INFRARED SPECTROSCOPY, FLAME
IONIZATION DETECTORS

(U)

(U)

THE NATIONAL CONCERN OVER THE CONTRIBUTION OF
AUTOMOTIVE EMISSIONS TO AIR POLLUTION HAS PROVIDED
THE IMPETUS FOR THE ESTABLISHMENT OF STRINGENT
EMISSION CONTROL REQUIREMENTS. WITH THIS IS THE
NEED TO HAVE AVAILABLE SUITABLE INSTRUMENTATION
CAPABLE OF MONITORING EXHAUST EMISSIONS AND INSURING
THAT POLLUTION CONTROL DEVICES ARE OPERATING
EFFECTIVELY. THIS STUDY SURVEYS THE
INSTRUMENTATION AVAILABLE CAPABLE OF MONITORING
EXHAUST EMISSIONS. INCLUDED ARE EQUIPMENT TYPES,
THEIR PRINCIPLES OF OPERATION, THEIR OPERATING
CHARACTERISTICS, THEIR SOURCES, AND THEIR PARTICULAR
APPLICATIONS. MATERIAL RELEVANT TO EMISSION
MEASUREMENT SYSTEMS IS GENERALLY COVERED.
DEVELOPMENT WORK ON A SIMPLE COLORIMETRIC METHOD OF
DETECTING CARBON MONOXIDE IN AUTOMOTIVE EXHAUST IS
CARRIED OUT. ALTHOUGH A SIMPLE LIGHT EMITTING
DIODE AND PHOTOTRANSISTOR CIRCUIT PERFORMS WELL IN
DETECTING THE REACTIONS INVOLVED, COMPLICATIONS TO
THE SYSTEM ARE THREATENED BY A NUMBER OF VARIABLES
WHICH HAVE TO BE CLOSELY CONTROLLED. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 784 845 6/10 6/20
ENVIRONMENTAL HEALTH LAB MCCLELLAN AFB CALIF

INDUSTRIAL HYGIENE ASPECTS OF CARBON
MONOXIDE.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,
MAR 74 39P DIAMOND, PHILIP ;
REPT. NO. EHL-M-74M-2
PROJ: EHL-M-HAI-345

UNCLASSIFIED REPORT

DESCRIPTORS: *CARBON MONOXIDE, *INDUSTRIAL HYGIENE,
*AIR POLLUTION, TOXICITY, DETECTION,
PHYSIOLOGICAL EFFECTS, CONTROL, SOURCES,
EXPOSURE(PHYSIOLOGY), ENVIRONMENTS, INTERNAL
COMBUSTION ENGINES, HEATING, AIRCRAFT, CHEMICALS,
TABLES(DATA)

(U)

IDENTIFIERS: AIR POLLUTION CONTROL, AIR POLLUTION
EFFECTS(HUMANS), CARBONYLHEMOGLOBIN, INDOOR
AIR POLLUTION

(U)

CARBON MONOXIDE WAS RECENTLY THE SUBJECT OF A
LABORATORY SEMINAR, AND THE INFORMATION IS PRESENTED
HERE FOR THE CONVENIENCE OF THE FIELD
BIOENVIRONMENTAL ENGINEER. CARBON MONOXIDE IS A
COLORLESS, ODORLESS GAS GENERALLY PRODUCED BY
INCOMPLETE OXIDATION OF ORGANIC OR CARBONACEOUS
MATERIAL. IT IS THE MOST WIDELY ENCOUNTERED TOXIC
GAS. FREQUENTLY IT IS ACCOMPANIED BY THE ODOR OF
OTHER ORGANIC BY-PRODUCTS OF COMBUSTION SUCH AS
ALDEHYDES AND HYDROCARBONS. THE THREE MAIN SOURCES
OF THIS GAS ARE SMOKING, INTERNAL COMBUSTION ENGINES
AND HEATING EQUIPMENT. THE TOXICITY OF CO,
METHODS OF CO DETECTION, SUBCLINICAL CO EFFECTS,
SOURCES OF CO AND EXPOSURE CONTROL MEASURES ARE
DISCUSSED.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 784 900 21/5 13/2
PRATT AND WHITNEY AIRCRAFT WEST PALM BEACH FLA

LOW-POWER TURBOPROPULSION COMBUSTOR EXHAUST
EMISSIONS. VOLUME III. ANALYSIS. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 1 APR-30 JUN
74,

JUL 74 63P MOSIER, STANLEY A. ROBERTS,
RICHARD ;
REPT. NO. PWA-FR-6487
CONTRACT: F33615-71-C-1870
PROJ: AF-3066
TASK: 306605
MONITOR: AFAPL TR-73-36-VOL-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-779
786.

DESCRIPTORS: *EXHAUST GASES, *GAS TURBINES, *AIR
POLLUTION, COMBUSTION, COMPUTER PROGRAMS,
MATHEMATICAL MODELS, TURBOFAN ENGINES,
HYDROCARBONS, REACTION KINETICS, PREDICTIONS,
COMBUSTION CHAMBERS, GAS ANALYSIS, PRESSURE,
NITROGEN OXIDES, TEST METHODS (U)
IDENTIFIERS: AIR POLLUTION CONTROL, JT9D
ENGINES, JT8D ENGINES, GAS SAMPLING (U)

THE EXPLORATORY DEVELOPMENT EFFORT TO FORMULATE AND
DEVELOP A COMPUTERIZED THEORETICAL MODEL TO PREDICT
EMISSION CHARACTERISTICS OF GAS TURBINE COMBUSTORS
AND TO IDENTIFY, EVALUATE, AND DEMONSTRATE IMPROVED
COMBUSTION DESIGN TECHNIQUES FOR INCREASING
COMBUSTION EFFICIENCY AT PART POWER OPERATING
CONDITIONS WAS EXPANDED TO INCLUDE DETAILED COMPUTER
MODEL AND EXPERIMENTAL DATA ANALYSES. THE
GENERALIZED COMBUSTOR COMPUTER PROGRAM WAS USED TO
PREDICT EXHAUST EMISSION CONCENTRATIONS FROM FIVE
DIFFERENT GAS TURBINE ENGINE BURNERS; PREDICTIONS
WERE THEN COMPARED WITH MEASURED DATA. IN GENERAL,
EXCELLENT AGREEMENT WAS ACHIEVED. IN ADDITION, A
DETAILED COMPARATIVE ANALYSIS OF EXPERIMENTAL DATA
GENERATED DURING THE LOW-PRESSURE AND HIGH-PRESSURE
TEST PROGRAMS WAS CONDUCTED. FROM THIS ANALYSIS A
PHENOMENOLOGICAL MODEL FOR THE PREMIXING TUBE/VIRTUAL
STAGING BURNER WAS PREPARED. FINALLY, A WORKHORSE,
VARIABLE GEOMETRY PREMIXING BURNER WAS DESIGNED FOR
REDUCING CONCENTRATIONS OF EXHAUST EMISSIONS OVER THE
OPERATING RANGE FROM PART TO FULL POWER.
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 785 347 21/2 7/4 7/2
ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE
STATION TENN

FORMATION OF MIXED MOLECULAR CLUSTERS IN
FREE-JET EXPANSIONS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 16 MAY-22 JUN 73,
SEP 74 44P BAILEY, A. B. ; POWELL, H.

M. I

REPT. NO. AEDC-TR-74-39
PROJ: AF-6687, ARO-VF224

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH ARO,
INC., TULLAHOMA, TENN., REPT. NO. ARO-VKF-TR-
74-14.

DESCRIPTORS: *EXHAUST GASES, *MASS SPECTROSCOPY,
MOLECULES, IONS, AIR POLLUTION, MOLECULAR BEAMS,
NITROGEN, NITROGEN OXIDES, SULFUR OXIDES, CARBON
DIOXIDE, WATER VAPOR, SIMULATION, METHANE,
PRESSURE, TEMPERATURE, CHEMICAL COMPOSITION,
STRATOSPHERE, EXPERIMENTAL DESIGN, MASS
SPECTRA

(U)

IDENTIFIERS: *JET ENGINE EXHAUST, *ION
CLUSTERS

(U)

TO DETERMINE THE CONCENTRATIONS OF JET ENGINE
POLLUTANTS IN THE STRATOSPHERE, IT IS NECESSARY TO
OBTAIN INFORMATION CONCERNING THE MOLECULAR
CLUSTERING CHARACTERISTICS OF POLLUTANT SPECIES.
IN THE PRESENT INVESTIGATION, A SIMULATION OF JET
ENGINE EXHAUST EMISSIONS HAS BEEN ACCOMPLISHED BY
EXPANDING VARIOUS GAS/WATER MIXTURES FROM A MOLECULAR
BEAM SOURCE AND MASS ANALYZING THE RESULTING
MOLECULAR BEAM. IT WAS FOUND POSSIBLE TO PRODUCE
IONIC CLUSTERS CONTAINING VARIOUS COMBINATIONS OF
N₂, CO₂, SO₂, CH₄, AND H₂O. (MODIFIED
AUTHOR ABSTRACT)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 808 580 7/5
AEROSPACE CORP EL SEGUNDO CALIF LABS DIV

THE ROLE OF NITRIC OXIDE IN PHOTOCHEMISTRY. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT. 1 MAR-1 AUG 66,
OCT 66 301P HEICKLEN, JULIAN ; COHEN,

NORMAN ;

REPT. NO. TR-1001(2250-40)-4

CONTRACT: AF 04(695)-1001

MONITOR: SSD TR-66-190

UNCLASSIFIED REPORT

DESCRIPTORS: (*PHOTOCHEMICAL REACTIONS, *NITROGEN
OXIDES), GUIDED MISSILES, EXHAUST GASES, AIR POLLUTION,
UPPER ATMOSPHERE, NITROSO COMPOUNDS, EXCITATION,
ELECTRONS, MOLECULAR ENERGY LEVELS, ULTRAVIOLET SPECTRA,
VISIBLE SPECTRA, MOLECULAR ORBITALS, GROUND STATE,
QUENCHING(INHIBITION), FLUORESCENCE, REACTION KINETICS,
OXYGEN, OZONE, CHEMILUMINESCENCE, HALOGENS, XENON,
FLUORIDES, AZINES, BORON COMPOUNDS, FREE RADICALS,
ALKANES, ALDEHYDES, KETONES, MOLECULAR ISOMERISM (U)
IDENTIFIERS: DIFLUORODIAZINE, NITROGEN OXIDE(N2O5),
NITROGEN OXIDE(NO), NITROGEN OXIDE(NO2), XENON
TETRAFLUORIDE, XENON DIFLUORIDE (U)

THE GAS PHASE CHEMISTRY OF NITRIC OXIDE IS REVIEWED
FOR REACTIONS OF IMPORTANCE BELOW ABOUT 300 C.
INCLUDED ARE REACTIONS OF VIBRATIONALLY AND
ELECTRONICALLY EXCITED NO AND THE REACTIONS OF NO
WITH STABLE MOLECULES, ELECTRONICALLY EXCITED
MOLECULES, ATOMS, IONS, AND RADICALS. THE FATE OF
NITROSO COMPOUNDS IS ALSO DISCUSSED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 841 125 13/2 21/2
NAVAL CIVIL ENGINEERING LAB PORT HUENEME CALIF

MULTISTAGE FLASH DESALINATION UNIT UTILIZING DIESEL
GENERATOR WASTE HEAT. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. JUL 65-JUN 67,
SEP 68 25P WILLIAMSON, J. S. ; HODGSON,

A. S. I

REPT. NO. NCEL-TR-595
PROJ: Y-F015-11-04-611

UNCLASSIFIED REPORT

DESCRIPTORS: (*DIESEL ENGINES, EXHAUST GASES), (*SEA
WATER, *DESALINATION), THERMAL CONDUCTIVITY,
EVAPORATORS, HEAT TRANSFER, HEAT TRANSFER COEFFICIENTS,
DISTILLING PLANTS, SALINITY, CORROSION RESISTANT ALLOYS,
ALUMINUM, DESIGN, PERFORMANCE(ENGINEERING), HEAT OF
VAPORIZATION, ANALYSIS OF VARIANCE, CURVE FITTING (U)

A MULTISTAGE FLASH EVAPORATOR UTILIZING DIESEL
GENERATOR WASTE HEAT HAS BEEN DEVELOPED FOR
DESALINATION. AFTER PRELIMINARY EXPERIMENTAL
STUDIES, A UNIT WAS CONSTRUCTED TO OPERATE
CONTINUOUSLY FROM A VARIABLE HEAT SUPPLY AND PRODUCE
BETWEEN 2,500 AND 6,000 GPD OF FRESHWATER.
INTERSTAGE BRINE TRANSFER IS AUTOMATICALLY
REGULATED BY LEVEL CONTROLLERS IN EACH STAGE, THUS
ELIMINATING THE NEED FOR MANUAL CONTROL OF THE UNIT
AS THE GENERATOR LOAD AND HENCE HEAT OUTPUT VARIES.
ALL-ALUMINUM CONSTRUCTION HAS REDUCED CORROSION,
AND THE UNIT HAS PERFORMED SATISFACTORILY DURING
TESTS. TYPICAL EXPERIMENTAL DATA IS INCLUDED.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 849 739 7/2 13/2
AIR FORCE ROCKET PROPULSION LAB EDWARDS AFB CALIF

THE SPECIFIC DETERMINATION OF AIR-BORNE
HYDROGEN CHLORIDE.

(U)

DESCRIPTIVE NOTE: FINAL REPT. MAR 68-MAR 69,
MAR 69 29P DEE, L. A. ; CITRO, M. F. ;
ZIEGE, G. E. ;
REPT. NO. AFRPL-TR-69-71
PROJ: AF-3059

UNCLASSIFIED REPORT

DESCRIPTORS: (*HYDROCHLORIC ACID, *GAS ANALYSIS),
(*SOLID ROCKET PROPELLANTS, EXHAUST GASES), (*EXHAUST
GASES, AIR POLLUTION), QUANTITATIVE ANALYSIS, SILVER
COMPOUNDS, NITRATES (U)
IDENTIFIERS: HYDROGEN CHLORIDE, SILVER NITRAT, JOINT
PANEL AMMUNITION DISPOSAL, JPAD (JOINT PANEL
AMMUNITION DISPOSAL) (U)

A NUMBER OF TECHNIQUES POTENTIALLY APPLICABLE TO
THE QUANTITATIVE MEASUREMENT OF GASEOUS HYDROGEN
CHLORIDE WERE SURVEYED. SELECTION OF THE DEVICE
DESCRIBED HEREIN, A SMALL GLASS TUBE FILLED WITH
AGNO₃-COATED PARTICLES, WAS BASED ON ITS UNIQUE
SPECIFICITY, SIMPLICITY, AND SENSITIVITY.
LABORATORY EVALUATION OF THIS DEVICE UNDER VARIED
SIMULATED ATMOSPHERIC CONDITIONS INCLUDING HUMIDITY
AND CHEMICAL INTERFERENCE (E.G., NO₂, NaCl
PARTICLES) INDICATES THAT IT MAY BE USEFUL FOR
FIELD MEASUREMENT OF AIR-BORNE HCL RESULTING FROM
THE COMBUSTION OF LARGE QUANTITIES OF SOLID
PROPELLANT. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 849 764 7/5 21/9 14/2
PANAMETRICS INC WALTHAM MASS

DEVELOPMENT OF A PROTOTYPE VAPOR DETECTION
DEVICE FOR ATMOSPHERIC SAMPLING AND ANALYSIS
FOR FLUORINE AND HYDROGEN FLUORIDE.

(U)

DESCRIPTIVE NOTE: FINAL REPT. FEB 66-OCT 67,
NOV 68 59P CUCCHIARA, ORLANDO ; GOODMAN,
PHILIP ; DONAGHUE, THOMAS ;
CONTRACT: AF 04(611)-11409
PROJ: AF-3850
MONITOR: AFRPL TR-68-233

UNCLASSIFIED REPORT

DESCRIPTORS: (*FLUORINE, *EXHAUST GASES), (*GAS
ANALYSIS, *FLUORINE COMPOUNDS), ROCKET PROPELLANTS,
FLUORIDES, RADIOACTIVE ISOTOPES, AIR POLLUTION, HYDROGEN
COMPOUNDS, RADIATION CHEMISTRY, EXCHANGE REACTIONS (U)
IDENTIFIERS: ATMOSPHERES, SAMPLING (U)

A PROTOTYPE MODEL OF AN INSTRUMENT WHICH
DEMONSTRATES THE APPLICABILITY OF THE RADIOCHEMICAL
EXCHANGE TECHNIQUE TO SIMULTANEOUSLY DETECT FLUORINE
AND HYDROGEN FLUORIDE WAS DEVELOPED. THE
INSTRUMENT UTILIZES SILICON KRYPTONATE FOR THE
DETECTION OF HYDROGEN FLUORIDE AND HYDROQUINONE
CLATHRATE FOR THE DETECTION OF FLUORINE. THIS
REPORT DESCRIBES THE CONSTRUCTION, CALIBRATION AND A
LABORATORY EVALUATION OF THE PERFORMANCE OF THE
INSTRUMENT. THE INSTRUMENT WILL SIMULTANEOUSLY
DETECT HYDROGEN FLUORIDE AT CONCENTRATIONS OF 0-50
PPM BY VOLUME AND FLUORINE AT 0-10 PPM BY VOLUME.
THE DETECTION SYSTEM IS COMPRISED OF THREE PACKAGES
WHICH CAN BE INTERCONNECTED FOR 8-HOUR OR 24-HOUR
BATTERY OPERATION OR FOR 24-HOUR 115V, 60 HZ LINE
OPERATION. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 877 045 13/2 14/2
AIR FORCE ROCKET PROPULSION LAB EDWARDS AFB CALIF

ATMOSPHERIC DIFFUSION OF BERYLLIUM PROGRAM
(PROJECT ADOBE). VOLUME II.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT. APR 64-FEB 70,
JUN 70 169P TUCKER, GORDON L. ; MALONE,
HUGH E. ; SMITH, ROBERT W. ;
REPT. NO. AFRPL-TR-70-65-VOL-2
PROJ: AF-3059
TASK: 305999, 305907

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 3, AD-877 206.

DESCRIPTORS: (*AIR POLLUTION, BERYLLIUM), (*BERYLLIUM,
DIFFUSION), (*SOLID PROPELLANT ROCKET ENGINES, CAPTIVE
TESTS), (*TEST FACILITIES, SOLID PROPELLANT ROCKET
ENGINES), WIND, VELOCITY, TABLES(DATA), EXHAUST GASES,
SAMPLING (U)

IDENTIFIERS: ADOBE(ATMOSPHERE DIFFUSION OF BERYLLIUM),
ADOBE PROJECT, ATMOSPHERIC DENSITY, DIFFUSION (U)

THE REPORT PRESENTS TABULATIONS OF THE DIFFUSION
DATA AND METEOROLOGICAL DATA COLLECTED DURING THE
PROJECT ADOBE DIFFUSION PROGRAM. THIS PROGRAM
WAS A FIELD INVESTIGATION WHICH PROVIDED EXPERIMENTAL
DATA ON THE DIFFUSION BY BERYLLIUM FROM 100 LBS TO
4000 LBS SOLID ROCKET MOTORS FIRED OVER A 25 SQUARE
MILE SECTOR ARRAYED WITH 492 AIR SAMPLERS (250-350
PER TEST) LOCATED FROM 600 METERS TO 9600 METERS
FROM THE SOURCE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 881 018 13/2
NAVAL MATERIAL COMMAND WASHINGTON D C

REPORT ON U.S. NAVY ENVIRONMENTAL
PROTECTION PROGRAM.

(U)

DESCRIPTIVE NOTE: SUMMARY REPT.,
AUG 70 73P KALINSKY, J. L. ;
PROJ: F38-532

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, *NAVY), (*WATER POLLUTION,
NAVY), (*SANITARY ENGINEERING, NAVY), CONTAMINATION,
ENVIRONMENT, EXPLOSIVES, SHIPS, WASTES(SANITARY
ENGINEERING), DISPOSAL, EXHAUST GASES, AIRCRAFT NOISE(U)
IDENTIFIERS: OILS, POLLUTION, *CONTROL, *POLLUTION,
WASTE TREATMEN, JOINT PANEL AMMUNITION
DISPOSAL, JPAD(JOINT PANEL AMMUNITION
DISPOSAL)

(U)

THIS REPORT DEFINES THE ENVIRONMENTAL
PROTECTION PROBLEMS OF THE U.S. NAVY,
ASHORE AND AFLOAT, AND SETS FORTH MEANINGFUL RDT
AND E REQUIREMENTS FOR EACH POLLUTION PROBLEM AREA.
AFTER LISTING THE MAJOR OPERATIONAL PROBLEMS, THE
EXISTING STATE-OF-THE-ART APPROACHES AND TECHNOLOGY
ARE DESCRIBED, AND WHERE APPLICABLE, A TECHNICAL
APPRAISAL IS RENDERED FOR SHORT RANGE AND LONG RANGE
SOLUTIONS. MAJOR NAVY PROBLEMS CONSIDERED
ARE: SHIPBOARD SANITARY WASTE TREATMENT AND DISPOSAL
SYSTEMS; OIL POLLUTION OF WATER RESULTING FROM
PUMPING OF BILGES, DEBALLASTING OF FUEL OR CARGO OIL
TANKS, PUMPING OF TANK SLOP, ACCIDENTAL AND
DELIBERATE FUEL (JP-5 CONTAMINATION) SPILLAGE;
AIRCRAFT ENGINE EXHAUST EMISSIONS AND NOISE; AND
ORDNANCE MATERIAL (EXPLOSIVE, PROPELLANTS,
PYROTECHNICS, AND OTTO FUEL) REPROCESSING AND
RECLAMATION. OTHER PROBLEM AREAS INCLUDED ARE:
INDUSTRIAL, GALLEY, AND TRASH WASTES FROM SHIPS;
SHORE AND SHIP DESTRUCTION OF CLASSIFIED MATERIAL;
SHIPS' ANTI-FOULING PAINTS; AIRCRAFT CLEANING AND
STRIPPING; SHIPBOARD NOISE ABATEMENT; AND WASTE OIL
DISPOSAL. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 884 193 14/2
GENERAL DYNAMICS CORP SAN DIEGO CALIF CONVAIR AEROSPACE
DIV

DEVELOPMENT OF HCL AND HF DETECTION
SYSTEM.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 1 JUN 70-2 JUN 71,
JUN 71 73P BARTLE, E. ROY ; MECKSTROTH,
EDGAR A. ; KAYE, SAM ;
CONTRACT: F04611-70-C-0064
MONITOR: AFRPL TR-71-59

UNCLASSIFIED REPORT

DESCRIPTORS: (*GAS DETECTORS, *ACIDS), (*MONITORS,
*EXHAUST GASES), (*AIR POLLUTION, GAS DETECTORS),
HYDROGEN COMPOUNDS, CHLORIDES, FLUORIDES, GAS FILTERS,
INFRARED SPECTROSCOPY, CONCENTRATION(CHEMISTRY),
HYDROCHLORIC ACID, DESIGN (U)
IDENTIFIERS: *AIR POLLUTION DETECTION, GAS FILTER
CORRELATION SYSTEMS, *FLUORIDES, *HYDROGEN, *HYDROGEN
CHLORIDE, ROCKET EXHAUST (U)

THE GAS FILTER CORRELATION (GFC) TECHNIQUE
FOR DETECTING HCL AND HF HAS BEEN DEMONSTRATED IN
THE LABORATORY. THE BASIC IDEA OF THIS TECHNIQUE
IS THAT A SAMPLE OF GAS CAN PROVIDE AN EFFICIENT
SELECTIVE FILTER FOR ABSORBING INFRARED RADIATION
EMITTED FROM A POLLUTED MIXTURE OF ATMOSPHERIC
CONSTITUENTS. IN OPTICAL INSTRUMENT TERMS,
SPECTRAL RESOLUTIONS OF BETTER THAN 0.1/CM MAY BE
ACHIEVED. THUS, A HIGH SPECIFICITY IS ATTAINED FOR
THE DETECTION OF A PARTICULAR POLLUTANT. A
LABORATORY GFC INSTRUMENT HAS BEEN DEVELOPED AND
APPLIED TO DETECT HCL AND HF OVER A CONCENTRATION
RANGE OF 0.1 TO 2500 PPM AND DEMONSTRATED TO BE
INSENSITIVE TO OTHER POSSIBLE INTERFERING PROPELLANT
VAPORS. THE TEST PROCEDURES FOR CONDUCTING THE
EXPERIMENTS ARE DESCRIBED. SERIOUS PROBLEMS WERE
ENCOUNTERED IN THE SAMPLE CELL OF THE INSTRUMENT
NAMELY, WALL ABSORPTION AND CHEMICAL REACTION
EFFECTS. THESE PROBLEMS WILL ARISE IN ANY TYPE OF
INSTRUMENT THAT USES A SAMPLE CELL OR SAMPLING
SYSTEM. RECOMMENDATIONS ARE MADE AS TO HOW THESE
PROBLEMS MAY BE ELIMINATED IN A PROPERLY DESIGNED
GFC FIELD INSTRUMENT THAT DOES NOT REQUIRE A SAMPLE
CELL OR SAMPLING SYSTEM. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 884 446 21/2 13/2 21/5
PURDUE UNIV LAFAYETTE IND JET PROPULSION CENTER

AN INVESTIGATION OF GAS TURBINE COMBUSTORS
WITH HIGH INLET AIR TEMPERATURES. PART
I: COMBUSTOR MODELLING.

(U)

DESCRIPTIVE NOTE: ANNUAL REPT. NO. 2, MAR 70-MAR 71,
MAR 71 118P HAMMOND, DEAN C. , JR.;
MELLOR, ARTHUR M. ;
REPT. NO. TM-71-1
CONTRACT: DAAE07-69-C-0756
MONITOR: TACOM TR-11321

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO PART 2, AD-884 359L AND
PART 3, AD-884 357L.

DESCRIPTORS: (*EXHAUST GASES, MATHEMATICAL PREDICTION),
(*COMBUSTION CHAMBERS, MATHEMATICAL MODELS), (*GAS
TURBINES, AIR POLLUTION), THERMAL RADIATION, THERMAL
ANALYSIS, HYDROCARBONS, PARTICLES, DYNAMICS, JET MIXING
FLOW, DESIGN (U)
IDENTIFIERS: *GAS TURBINE COMBUSTORS (U)

AN ANALYTICAL MODEL HAS BEEN DEVELOPED WHICH WILL
PREDICT THE PERFORMANCE AND POLLUTANT EMISSIONS OF
GAS TURBINE COMBUSTORS. THE ENTIRE GAS TURBINE
COMBUSTOR IS APPROXIMATED AS A COLLECTION OF
PERFECTLY STIRRED ZONES. WITHIN EACH ZONE A GENERAL
HYDROCARBON COMBUSTION MECHANISM IS USED TO PREDICT
THE GAS COMPOSITION AND TEMPERATURE. THE ZONE
VOLUMES AND SIZES ARE ASSIGNED FROM CONSIDERATION OF
THE THEORETICALLY PREDICTED GAS FLOWS THEREBY
APPROXIMATING THE MIXING BEHAVIOR OF THE SYSTEM.
SELECTED PREDICTIONS OF THE OVERALL MODEL FOR A
'TYPICAL' AIRCRAFT COMBUSTOR ARE PRESENTED. THESE
RESULTS ARE SEEN TO BE QUALITATIVELY ACCURATE AND
FALL IN THE RANGE OF VALUES TYPICALLY OBSERVED IN
PRACTICAL SYSTEMS. (AUTHOR)

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 891 325 13/2
AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF
SYSTEMS AND LOGISTICS

A CASE STUDY IN POLLUTION CONTROL: WRIGHT-
PATTERSON AIR FORCE BASE.

(U)

DESCRIPTIVE NOTE: MASTER'S THESIS,
AUG 71 71P ZECK, FRANCIS H. ;
REPT. NO. SLSR-47-71B

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR POLLUTION, *MILITARY FACILITIES),
(*AIR FORCE, AIR POLLUTION), LAW, HISTORY, CONTROL,
INCINERATORS, EVAPORATION, OHIO, DEPARTMENT OF DEFENSE,
AIRCRAFT ENGINES, PARTICLES, CARBON MONOXIDE, SULFUR
COMPOUNDS, NITROGEN OXIDES, THESES (U)
IDENTIFIERS: *AIR POLLUTION, *CONTROL, GREENE
COUNTY(OHIO), SULFUR DIOXIDE, *WRIGHT-PATTERSON AIR
FORCE BASE (U)

THE PROBLEM OF MAINTAINING ENVIRONMENTAL QUALITY
FACES MANAGERS AT ALL LEVELS OF GOVERNMENT SERVICE.
THE STUDY DESCRIBES HOW A SELECTED UNITED
STATES AIR FORCE BASE MANAGED ITS AIR POLLUTION
PROBLEMS. A NON-TECHNICAL INTRODUCTION INTO THE
NATURE OF AIR POLLUTION IS GIVEN. THE HISTORY OF
AIR POLLUTION LEGISLATION IS DESCRIBED WITH EMPHASIS
ON STATUTES AND EXECUTIVE ORDERS WHICH HAD THE
GREATEST EFFECT ON THE MILITARY ESTABLISHMENT. A
BRIEF DESCRIPTION OF DEPARTMENT OF DEFENSE
PROGRAMS FOR AIR POLLUTION CONTROL IS FOLLOWED BY A
DETAILED DISCUSSION OF AIR FORCE POLICIES AND
PROGRAMS. THE SPECIFIC AIR POLLUTANTS AT WRIGHT-
PATTERSON AFB ARE DETAILED AS WELL AS METHODS
USED FOR CONTROL. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 902 008 13/2 13/1
ARMY ENVIRONMENTAL HYGIENE AGENCY EDGEWOOD ARSENAL MD

EVALUATION OF HEALTH HAZARDS IN BUILDING M-9, DEFENSE PERSONNEL SUPPORT CENTER, PHILADELPHIA, PENNSYLVANIA, 8, 16 AND 21 MARCH 1972. (U)

DESCRIPTIVE NOTE: INDUSTRIAL HYGIENE SPECIAL STUDY (FINAL),

JUL 72 34P BISHOP, RONALD M. ;
REPT. NO. USAEHA-35-032-72

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR CONDITIONING EQUIPMENT, AIR POLLUTION), (*AIR POLLUTION, *BUILDINGS), CONTROLLED ATMOSPHERES, EXHAUST GASES, TEMPERATURE, HUMIDITY, DUST, CONTAMINATION, VENTILATION FANS, VENTS, INTERNAL COMBUSTION ENGINES, COMBUSTION PRODUCTS, WASTE GASES, HAZARDS, ODORS, AMMONIA, CARBON MONOXIDE, NITROGEN OXIDES, INDUSTRIAL MEDICINE, SAMPLING, PARTICLES, CONCENTRATION(CHEMISTRY), AIR FILTERS, PARTICLE SIZE, DISTRIBUTION, GAS FLOW (U)

IDENTIFIERS: FLOOR PLANS, HAZARDS, PUBLIC HEALTH, NITROGEN OXIDE(N02) (U)

THIS SPECIAL STUDY WAS PERFORMED TO DETERMINE THE PRESENCE AND EXTENT OF ANY ADVERSE ENVIRONMENTAL CONDITIONS WHICH MAY RESULT IN A HEALTH HAZARD IN BLDG M-9. IT INCLUDED AN EVALUATION OF THE VENTILATION SYSTEMS AND MEASUREMENTS OF TEMPERATURE, HUMIDITY, DUSTINESS, LIGHTING AND INDOOR ATMOSPHERIC CONTAMINATION. THE VENTILATION SYSTEMS WERE NOT BALANCED AND A CROSS-CONTAMINATION, OF INTERNAL COMBUSTION ENGINE EXHAUST PRODUCTS, BETWEEN THE ADJACENT MAINTENANCE SHOP (BLDG 30) AND SECTION 3-F IS PROBABLE. ADDITIONALLY, THE DUST CONCENTRATION IN SECTION 3-F EXCEEDED THE EXTRAPOLATED DUSTINESS LIMIT. TEMPERATURE AND HUMIDITY REMAINED RELATIVELY CONSTANT. RECOMMENDATIONS ARE MADE TO REBALANCE THE VENTILATION SYSTEMS AND PREVENT ENGINE EXHAUST PRODUCTS AND ROOF DUST FROM ENTERING SECTION 3-F. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 906 628 17/8 19/7 21/8.2
GENERAL RESEARCH CORP ARLINGTON VA

ROCKET PLUME OPTICAL SIGNATURES.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 20 AUG 71-30 SEP 72.
OCT 72 124P
REPT. NO. GRC-CR-5-244
CONTRACT: DAHC60-70-C-0078

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH
MCDONNELL DOUGLAS ASTRONAUTICS CO.- WEST,
HUNTINGTON BEACH, CALIF.

DESCRIPTORS: (*COMBUSTION PRODUCTS, EMISSIVITY),
(*ROCKETS, *EXHAUST GASES), (*SPECTRUM SIGNATURES,
*COMPUTER PROGRAMS), SOLID PROPELLANT ROCKET ENGINES,
HIGH ALTITUDE, PARTICLES, MATHEMATICAL MODELS, ALBEDO,
SOLAR RADIATION, EXCITATION, EXOSPHERE, ELECTROMAGNETIC
RADIATION, SCATTERING, PARTICLE SIZE, ALUMINA, GAS FLOW,
SOLID ROCKET PROPELLANTS, ROCKET NOZZLES (U)

IDENTIFIERS: FLAME COMPUTER PROGRAM,

*PLUMES(RADIATION), *ROCKET EXHAUST

(U)

AS PART OF THE OPTICAL SIGNATURES PROGRAM,
MCDONNELL DOUGLAS ASTRONAUTICS COMPANY-
WEST HAS DEVELOPED THE INITIAL WORKING MODEL OF A
CODE TO DESCRIBE THE GROSS FEATURES OF ROCKET-PLUME
RADIATION FOR ALTITUDES ABOVE 75 N MI. THE MAIN
EFFORT IS THE CONSTRUCTION OF A SCHEME FOR
INTEGRATION OF AN ARBITRARY FUNCTION THROUGH AN
ARBITRARY AXISYMMETRIC ROCKET PLUME, WITH ANY
SPECIFIED LOOK ANGLE, PLUME DIRECTION, AND VEHICLE
VELOCITY DIRECTION. RADIANCES ARE PRESENTED AS
INTEGRATED VALUES IN A SPECIFIED SPECTRAL BAND. THE
EQUATIONS USED AND A PRINTOUT OF THE CODE AND OF A
SAMPLE APPLICATION ARE INCLUDED. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 913 714 17/5 21/8.1 21/8.2 21/9.1
21/9.2
CALSPAN CORP BUFFALO N Y

PLUME INTERFERENCE ASSESSMENT AND
MITIGATION.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,
JUN 73 66P MARRONE, P. V. ;
REPT. NO. CALSPAN-KC-5134-A-6
CONTRACT: DAHC60-69-C-0035

UNCLASSIFIED REPORT

DESCRIPTORS: (*EXHAUST GASES, ROCKET ENGINES),
(*COMBUSTION PRODUCTS, ROCKET ENGINES), (*INFRARED
RADIATION, EXHAUST GASES), HIGH ALTITUDE, SIMULATION,
ALTITUDE CHAMBERS, LIQUID PROPELLANT ROCKET ENGINES,
SOLID PROPELLANT ROCKET ENGINES, INFRARED DETECTORS,
DETECTORS, COMPATIBILITY, SIGNAL-TO-NOISE RATIO,
PARTICLES, COLLECTING METHODS, MONOPROPELLANTS,
BIPROPELLANTS, PERFORMANCE(ENGINEERING), ROCKET NOZZLES,
BUTADIENES, HYDRAZINE, HYDRAZINE DERIVATIVES, NITROGEN
OXIDES, HALOGENATED HYDROCARBONS, HALOGEN COMPOUNDS,
SPECTROMETERS, ALUMINUM, AMMONIUM PERCHLORATE, INFRARED
RADIATION, BOOSTER ROCKETS, ATTITUDE CONTROL SYSTEMS (U)
IDENTIFIERS: CARBOXY TERMINATED POLYMERS, CTPB
PROPELLANT INGREDIENT, FAIR PROGRAM, FLY ALONG
INFRARED, HTPB PROPELLANT INGREDIENT, HYDROXY
TERMINATED POLYMERS, INFRARED RADIATION, LONG
WAVELENGTHS, *PLUMES(RADIATION), POLYBUTADIENE/CARBOXY
TERMINATED, POLYBUTADIENE/HYDROXY TERMINATED, SHORT
WAVELENG (U)

THE PRIMARY PURPOSE OF THE ROCKET PLUME DIAGNOSTIC
PROGRAM IS TO INVESTIGATE THE HIGH-ALTITUDE NEAR-
FIELD RADIANCE SIGNATURE OF ROCKET MOTORS, AND TO
DEVELOP THE DIAGNOSTIC TECHNIQUES REQUIRED TO
CHARACTERIZE VARIOUS TYPES OF ROCKET PLUMES. THE
DESIGN, CALIBRATION, AND INSTALLATION OF A COLD-
OPTICS LWIR DETECTING SYSTEM ON ONE OF THE
CALSPAN HIGH-ALTITUDE TEST CHAMBERS IS DISCUSSED.
PARTICULATE FLUX MEASUREMENT TECHNIQUES ARE
DISCUSSED, AND THE DESIGN AND DEVELOPMENT OF RESEARCH
ROCKET MOTORS FOR USE WITH SPECIFIC PROPELLANT
COMBINATIONS IS PRESENTED. A TEST PROGRAM FOR
SMALL LIQUID AND SOLID THRUSTERS, SUCH AS THOSE
PROPOSED FOR THE FAIR II PIE FLIGHT PROGRAM, HAS
BEEN INITIATED, AND EXPERIMENTAL DATA FOR A
MONOPROPELLANT HYDRAZINE THRUSTER ARE PRESENTED AND
COMPARED WITH IR RADIANCE PREDICTIONS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 913 820 17/5 21/8.2 21/2 21/9.2
20/10
CALSPAN CORP BUFFALO N Y

ROCKET PLUME RADIATION DUE TO INTERACTIONS
WITH THE ATMOSPHERE. VOLUME I. FAR FIELD
PLUME RADIANCE MODEL.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT.,
JUL 73 121P RIEGER, THOMAS J. ; BAUM,
HOWARD R. ; KOLB, CHARLES E. ; TAIT, KEVIN S. ;
GERMELES, APOSTOLOS E. ;
CONTRACT: DAHC60-69-C-0035

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH
AERODYNE RESEARCH, INC., BURLINGTON, MASS.,
REPT. NO. ARI-RN-20-VOL-1. SEE ALSO VOLUME 3,
AD-913 821L.

DESCRIPTORS: (*SOLID PROPELLANT ROCKET ENGINES, EXHAUST
GASES), (*INFRARED DETECTORS, SOLID PROPELLANT ROCKET
ENGINES), (*MOLECULAR SPECTROSCOPY, EXHAUST GASES),
(*DIATOMIC MOLECULES, INTERACTIONS), (*INFRARED
SPECTROSCOPY, HIGH ALTITUDE), SOLID ROCKET PROPELLANTS,
COMBUSTION PRODUCTS, GUIDED MISSILE WARHEADS, HYPERSONIC
FLOW, EXCITATION, HYDROGEN COMPOUNDS, EMISSIVITY,
FLUORIDES, MOLECULAR ENERGY LEVELS, OXYGEN, WAKE,
MOLECULAR ROTATION, CHLORIDES, ATMOSPHERE ENTRY, REENTRY
VEHICLES, INFRARED RADIATION, HYDROXIDES, INTENSITY,
QUANTUM STATISTICS, MATHEMATICAL PREDICTION, CONTINUUM
MECHANICS, FLOW FIELDS, HELIUM, REACTION KINETICS,
HYDROGEN, RAREFIED GAS DYNAMICS,
APPROXIMATION(MATHEMATICS) (U)
IDENTIFIERS: BGK APPROXIMATION, COLLISIONS, MOLECULES, (U)
*PLUMES(RADIATION) (U)

CALCULATIONS ARE PRESENTED THAT ARE ELEMENTS OF A
MODEL TO PREDICT THE IR RADIATION EMITTED BY HIGH-
ALTITUDE ROCKET PLUMES, BECAUSE OF THE INTERACTION OF
THE PLUME GASES WITH THE AMBIENT ATMOSPHERE. A
MODEL OF PLUME RADIANCE IS PRESENTED, APPROPRIATE TO
HIGH ALTITUDES WHERE THE AVERAGE TIME BETWEEN PLUME
AND ATMOSPHERIC SPECIES COLLISIONS IS GREATER THAN
THE RADIATIVE LIFETIMES OF THE RELEVANT EXCITED
MOLECULAR STATES. THE THREE PARTS OF THE
CALCULATIONS - FLOW FIELD DENSITY, MOLECULAR
COLLISIONAL EXCITATION, AND MOLECULAR NONEQUILIBRIUM
RADIATION - ARE IDENTIFIED AND DISCUSSED.
(AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD- 913 821 17/5 21/8.2 21/2 21/9.2
20/6
CALSPAN CORP BUFFALO N Y

ROCKET PLUME RADIATION DUE TO INTERACTIONS
WITH THE ATMOSPHERE. VOLUME III. PLUME
RADIANCE PREDICTIONS FOR ATHENA H SECOND
AND THIRD STAGE BOOSTERS. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT.,
JUL 73 18P RIEGER, THOMAS J. ; WORSTER,
BRUCE W. ; MORAN, JAMES P. ;
CONTRACT: DAHC60-69-C-0035

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH
AERODYNE RESEARCH, INC., BURLINGTON, MASS.,
REPT. NO. ARI-RN-20-VOL-3. SEE ALSO VOLUME 1,
AD-913 820L.

DESCRIPTORS: (*SOLID PROPELLANT ROCKET ENGINES, EXHAUST
GASES), (*INFRARED DETECTORS, SECOND-STAGE MOTORS),
(*COMBUSTION PRODUCTS, ATMOSPHERE ENTRY), (*INFRARED
SPECTROSCOPY, ALUMINA), (*SOLID ROCKET PROPELLANTS,
ALUMINUM COMPOUNDS), RADIOMETERS, TEMPERATURE,
INTENSITY, INFRARED RADIATION, STAGING, THRUST,
MOLECULAR SPECTROSCOPY, ALTITUDE, EMISSIVITY, HYPERSONIC
TEST VEHICLES, MATHEMATICAL PREDICTION, OPTICAL
TRACKING, INTERACTIONS, AIR, REENTRY VEHICLES, WAKE,
GUIDED MISSILE WARHEADS, CARBON DIOXIDE, CARBON
MONOXIDE, WATER VAPOR, HYDROGEN, NITROGEN, HYDROGEN
COMPOUNDS, CHLORIDES (U)
IDENTIFIERS: ATHENA, EMISSION SPECTRA,
*PLUMES(RADIATION), TRIOXIDES (U)

PREDICTIONS OF THE PLUME RADIANCE AND RADIANT
INTENSITY IN THE INFRARED WERE MADE FOR THE PLUMES
PRODUCED BY ATHENA H SECOND AND THIRD STAGES.
PREDICTIONS OF BOTH THE RADIANCE DUE TO EMISSION
FROM THE ALUMINA PARTICLES PRODUCED BY THESE SOLID
PROPELLANT ENGINES WERE CALCULATED. FOR BOTH STAGES
IT WAS FOUND THAT THE EMISSION FROM THE ALUMINA
PARTICLES COMPLETELY DOMINATED THE GASEOUS EMISSION.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A000 202 13/2
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTESVILLE
VA

THE PROBLEM OF PREVENTING VEHICULAR AIR
POLLUTION AND METHODS OF SOLUTION. (U)

SEP 74 13P
REPT. NO. FSTC-HT-23-897-73

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF AVTOMOBILNAYA
PROMYSHLENNOST (USSR) N8 P9-13 1972.

DESCRIPTORS: *AIR POLLUTION, *EXHAUST GASES,
VEHICLES, TRANSLATIONS, USSR (U)

IDENTIFIERS: AUTOMOBILE EXHAUST, AIR POLLUTION
ABATEMENT, *AIR POLLUTION CONTROL, AIR POLLUTION
CONTROL EQUIPMENT (U)

THE REPORT DISCUSSES VEHICULAR AIR POLLUTION IN THE
USSR AND VARIOUS CONTROL STRATEGIES AND
EQUIPMENT. (U)

UNCLASSIFIED

000M1

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A001 564 13/2 1/5
ARGONNE NATIONAL LAB ILL ENERGY AND ENVIRONMENTAL SYSTEMS
DIV

AIRPORT VICINITY AIR POLLUTION STUDY.
MODEL APPLICATION AND VALIDATION AND AIR
QUALITY IMPACT ANALYSIS AT WASHINGTON
NATIONAL AIRPORT.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,
JUL 74 211P WANG, I. T. ; ROTE, D. M. ;
CONLEY, L. A. ;
CONTRACT: DOT-FA71WAI-223
MONITOR: FAA-RD 74-132

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-789 049.

DESCRIPTORS: *AIRPORTS, *AIR POLLUTION,
DISPERSIONS, COMPUTERIZED SIMULATION, AIR QUALITY,
DISTRICT OF COLUMBIA, MODELS, DATA PROCESSING,
EXHAUST GASES, COMPUTER PROGRAMMING, CARBON
MONOXIDE, NITROGEN OXIDES, HYDROCARBONS,
PARTICLES, AIR TRAFFIC

(U)

IDENTIFIERS: AIRCRAFT EXHAUST, *AIR QUALITY DATA,
*WASHINGTON NATIONAL AIRPORT, ATMOSPHERIC
DIFFUSION, MOTOR VEHICLES

(U)

THE REPORT DESCRIBES A NEW VERSION OF THE AIRPORT
VICINITY AIR POLLUTION MODEL (AVAP
MODEL) DEVELOPED BY THE ENERGY AND
ENVIRONMENTAL SYSTEMS DIVISION OF ARGONNE
NATIONAL LABORATORY. THE NEW AVAP MODEL
FEATURES A SIMPLIFIED AND GENERALIZED INPUT STRUCTURE
AS WELL AS A BUILT-IN AIRPORT EMISSIONS COMPUTATIONAL
PACKAGE. APPLICATION AND VALIDATION OF THE MODEL
HAVE BEEN CARRIED OUT USING THE AIRPORT ACTIVITY AND
AIR QUALITY DATA COLLECTED AT WASHINGTON NATIONAL
AIRPORT. A DETAILED ACCOUNT OF THIS EFFORT IS
GIVEN. THE PRESENT REPORT ALSO INCLUDES AN
ANALYSIS OF THE IMPACT ON AIR QUALITY IN THE VICINITY
OF WASHINGTON NATIONAL AIRPORT OF AIRPORT-
RELATED POLLUTANT EMISSIONS USING THE AVAP MODEL.
THE AIR QUALITY IMPACT IS EVALUATED BY COMPARING
THE COMPUTED AIR QUALITY CONCENTRATIONS WITH THE
APPROPRIATE FEDERAL AIR QUALITY STANDARDS FOR
A VARIETY OF COMBINATIONS OF AIRPORT ACTIVITY AND
METEOROLOGICAL CONDITIONS.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A001 728 21/5
AVCO LYCOMING DIV STRATFORD CONN

PLT 27 GAS TURBINE ENGINE EXHAUST
EMISSION AND NOISE MEASUREMENTS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 21 MAY-31 DEC 73,
SEP 74 111P RUBINS, PHILIP M. ; AUERBACH,
EDWARD ; DEMAN, JOCHEN A. ;
REPT. NO. LYC-74-7
CONTRACT: DAAJ02-73-C-0068
PROJ: DA-1-G-162204-AA-71
TASK: 1-G-162204-AA-7110
MONITOR: USAAMRDL TR-74-61

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: *TURBOSHAFT ENGINES, *EMISSION,
*EXHAUST GASES, AIRCRAFT ENGINES, AIR POLLUTION,
NOISE POLLUTION, NOISE POLLUTION, ACOUSTIC
MEASUREMENT

(U)

IDENTIFIERS: *PLT 27 GAS TURBINES, JET ENGINE
EXHAUST, SMOKE NUMBER

(U)

PLT 27 GAS TURBINE ENGINE EXHAUST GAS AND NOISE
WERE MEASURED AND ANALYZED. THE RESULTS OF THE
EXHAUST GAS EMISSION ANALYSIS SHOW THAT THE EXHAUST
GASES HAVE A LOW CONTENT OF UNBURNED COMBUSTION
PRODUCTS, I.E., HYDROCARBONS AND CARBON MONOXIDE,
DOWN TO IDLE POWER DUE TO THE HIGH COMBUSTION
EFFICIENCY OF THIS ENGINE. THE COMBUSTION
EFFICIENCY IS 99.5 PERCENT AT IDLE AND 99.9 PERCENT
ABOVE 10 PERCENT OF MAXIMUM-RATED POWER. THE SMOKE
NUMBERS OF THE PLT 27 ENGINE ARE EXTREMELY LOW.
NO VISIBLE SMOKE WAS PRODUCED AT ANY POWER SETTING
WITH ANY OF THE INJECTOR SYSTEMS TESTED. THE PLT
27 ENGINE MEETS THE EXHAUST GAS EMISSION STANDARDS
SET BY THE EPA FOR 1979 FOR FIXED-WING
AIRCRAFT.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A001 730 21/5 13/2

ZWICK CO SANTA ANA CALIF

DEVELOPMENT OF A LOW EMISSION COMBUSTION
SYSTEM FOR THE MERDC 10 KW TURBO-ALTERNATOR.

(U)

DESCRIPTIVE NOTE: REPT. NO. 2(FINAL),
MAY 74 135P ZWICK, E. B. ; BOTTOS, R.

D. ;

CONTRACT: DAAK02-73-C-0001

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: *AIR POLLUTION, *COMBUSTORS, *GAS
TURBINES, COMBUSTION, EMISSION, BURNERS, FUEL
SYSTEMS, VAPORIZATION, HYDROCARBONS, CARBON
MONOXIDE, NITROGEN OXIDES, FEASIBILITY STUDIES,
FABRICATION, MEASUREMENT, FIELD TESTS,
TABLES(DATA), ENGINEERING DRAWINGS

(U)

IDENTIFIERS: AIR POLLUTION CONTROL,

*TURBOALTERNATORS, DESIGN

(U)

THIS REPORT COVERS THE FIRST PHASE OF A PROGRAM TO
DEMONSTRATE THE FEASIBILITY OF A LOW EMISSION
COMBUSTION SYSTEM FOR THE MERDC 10 KW
TURBOALTERNATOR. EMISSIONS FOR THE
TURBOALTERNATOR WITH ITS ORIGINAL BURNER WERE
FOUND TO BE VERY HIGH. EMISSIONS FROM THE
TURBOALTERNATOR WITH A SPECIAL ZWICK BURNER
WERE DECREASED TO VERY LOW VALUES. TYPICAL RESULTS
ARE SHOWN.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A001 874 13/10 13/2
TRANSPORTATION SYSTEMS CENTER CAMBRIDGE MASS

MARINE ENGINE-EXHAUST EMISSIONS TEST
CELL.

(U)

DESCRIPTIVE NOTE: INTERIM REPT. JAN-DEC 73,
NOV 74 67P KLAUBERT, EARL C. ; WALTER,
ROBERT A. ;
REPT. NO. DOT-TSC-USCG-74-2
MONITOR: USCG D-27-75

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO NOV 73, AD-769 455.

DESCRIPTORS: *MARINE SURFACE PROPULSION, *MOTORS,
EMISSION, EXHAUST SYSTEMS, AIR POLLUTION,
COMBUSTION PRODUCTS, POLLUTANTS, NOISE REDUCTION
IDENTIFIERS: *OUTBOARD MOTORS, *EXHAUST
EMISSIONS

(U)

(U)

A MARINE ENGINE EXHAUST EMISSIONS TEST CELL FOR
BOAT-SIZE DIESEL ENGINES (APPROX. 200 HP) AND
OUTBOARD ENGINES WAS CONSTRUCTED AS PART OF A PROJECT
SPONSORED BY THE UNITED STATES COAST GUARD
FOR THE MONITORING AND CONTROL OF EMISSIONS FROM
MARINE SOURCES. THIS REPORT DESCRIBES THE SALIENT
FEATURES OF THE CELL INCLUDING ITS STRUCTURAL ASPECTS
AND NOISE ATTENUATING CAPABILITIES. THE ENGINE
TYPES TO BE TESTED ARE BRIEFLY OUTLINED. THE POWER
TRAIN FOR TESTING OUTBOARD MOTORS ALONG WITH THE
INSTRUMENTATION ASSEMBLED FOR MONITORING AND
CONTROLLING THE VARIOUS TEST ENGINE OPERATING
PARAMETERS ARE DISCUSSED IN DETAIL. TECHNIQUES FOR
HANDLING THE OUTBOARD ENGINE-EXHAUST EMISSION GAS
SAMPLE AND THE INSTRUMENTATION FOR EMISSION
MEASUREMENTS ARE DESCRIBED.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A002 510 4/1 6/6
STANFORD RESEARCH INST MENLO PARK CALIF

STRATOSPHERIC ELECTRICITY.

(U)

DESCRIPTIVE NOTE: SCIENTIFIC NOTE B,
74 9P HAKE, R. D., JR; PIERCE, E.
T. ;

CONTRACT: N00014-74-C-0134

PROJ: SRI-3062

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN INTERNATIONAL CONFERENCE
ON THE ENVIRONMENTAL IMPACT OF AEROSPACE OPERATIONS
IN THE HIGH ATMOSPHERE (2ND) PREPRINT VOLUME,
P47-52, 8-10 JUL 74.

SUPPLEMENTARY NOTE:

DESCRIPTORS: *ATMOSPHERIC ELECTRICITY,
*STRATOSPHERE, AIR POLLUTION, AEROSOLS, PARTICLE
SIZE, ION DENSITY, RECOMBINATION REACTIONS,
CONDENSATION NUCLEI, VOLCANOES, METEOROLOGICAL
DATA, SUPERSONIC TRANSPORTS, EXHAUST GASES,
EXPERIMENTAL DATA, MATHEMATICAL PREDICTION,
REPRINTS

(U)

IDENTIFIERS: ENVIRONMENTAL IMPACT, AITKEN
NUCLEI

(U)

THE MAIN FEATURES OF STRATOSPHERIC ELECTRICITY, AS
DERIVED FROM EXPERIMENTAL DATA, ARE SUMMARIZED. IT
IS SHOWN THAT THE AGREEMENT BETWEEN EXPERIMENTAL
OBSERVATIONS AND THEORETICAL PREDICTIONS IS IMPROVED
WHEN THE INFLUENCE OF STRATOSPHERIC AEROSOLS IS
CONSIDERED. VARIOUS COMBINATIONS OF AEROSOL NUMBER
DENSITY AND RADIUS CAN EXPLAIN THE OBSERVED EFFECTS.
HOWEVER, THE MOST PROBABLE EXPLANATION INVOLVES
AITKEN NUCLEI (RADIUS <0.1 MICRON AT DENSITIES
RANGING FROM 100 TO 1000/CC. DENSITIES OF THESE
ORDERS ARE LIKELY BOTH TO BE PRESENT NATURALLY AND TO
BE PRODUCED BY THE OPERATION OF A FLEET OF SUPERSONIC
TRANSPORTS (SSTS). (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A003 335 13/2 21/4 21/7 11/8
SOUTHWEST RESEARCH INST SAN ANTONIO TEX ARMY FUELS AND
LUBRICANTS RESEARCH LAB

STUDY AND EVALUATION IN THE FIELD OF
ENVIRONMENTAL POLLUTION RELATED TO THE
UTILIZATION OF ARMY MATERIEL.

(U)

DESCRIPTIVE NOTE: FINAL SUMMARY REPT.

OCT 74 36P

REPT. NO. AFLRL-50

CONTRACT: DAAD05-72-C-0053

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: *AUTOMOTIVE FUELS, *ARMY RESEARCH,
*LUBRICATING OILS, *INTERNAL COMBUSTION ENGINES,
*AIR POLLUTION, SCIENTIFIC RESEARCH, EXHAUST
GASES, CHEMICAL COMPOSITION, GASOLINE, DIESEL
FUELS, ROTARY COMBUSTION ENGINES, MILITARY VEHICLES,
PERFORMANCE(ENGINEERING), CHEMICAL ANALYSIS,
SEALED SYSTEMS, LUBRICATION

(U)

IDENTIFIERS: AIR POLLUTION CONTROL, AIR POLLUTION
ABATEMENT, WATER INJECTION

(U)

FOR THE PAST THREE YEARS, THE U.S. ARMY
FUELS AND LUBRICANTS RESEARCH LABORATORY HAS
BEEN ENGAGED IN A PROGRAM OF RESEARCH ON EMISSION-
RELATED PHENOMENA. ACTIVITIES WITHIN THE SEVERAL
PHASES OF THIS WORK HAVE BEEN QUITE DIVERSE, AND,
CONSEQUENTLY, THE NUMEROUS PAPERS, REPORTS, AND OTHER
DOCUMENTS DETAILING SPECIFIC FINDINGS HAVE BEEN
DISTRIBUTED THROUGH A VARIETY OF ARMY AND
PROFESSIONAL SOCIETY ORGANIZATIONAL CHANNELS. IT IS
THE PURPOSE OF THIS FINAL SUMMARY REPORT TO
PROVIDE: AN OVERVIEW OF THE PROGRAM PHASES,
EMPHASIZING THE OBJECTIVE, APPROACH, AND
ACCOMPLISHMENTS OF EACH; AND ADEQUATE REFERENCE
GUIDELINES (BIBLIOGRAPHY) TO PERMIT THE READER
DESIRING GREATER DETAIL TO QUICKLY SECURE THE
APPROPRIATE PUBLICATION. PROJECTS INCLUDE FUEL,
ENGINE, LUBRICANT, AND ANALYTICAL RESEARCH, AND
POLLUTION CONTROL LIASON.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A003 627 14/2 7/3 21/5
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX

CRYOGENIC SAMPLING OF TURBINE ENGINE
EXHAUST.

(U)

DESCRIPTIVE NOTE: PROGRESS REPT. MAY-DEC 73,
NOV 74 13P CONCKLE, JAMES P. ; LACKEY,
WILLIAM W. ; MILLER, RICHARD L. ;
REPT. NO. SAM-TR-74-54
PROJ: AF-7164
TASK: 716416

UNCLASSIFIED REPORT

DESCRIPTORS: *EXHAUST GASES, *GAS TURBINES,
ORGANIC COMPOUNDS, CRYOGENICS, SAMPLING,
CHEMICAL COMPOSITION, JET ENGINE FUELS
IDENTIFIERS: *GAS SAMPLING, *COLD TRAPS,
AIRCRAFT EXHAUST

(U)

(U)

A MULTISTAGE CRYOGENIC TRAPPING SYSTEM WAS USED TO
SAMPLE AND CONCENTRATE ORGANIC CONSTITUENTS FROM
TURBINE ENGINE COMBUSTOR EXHAUST. ANALYSES WERE
CONDUCTED BY A GAS CHROMATOGRAPH-MASS SPECTROMETER
COUPLED WITH A DATA ACQUISITION SYSTEM. A 30-
MINUTE SAMPLE COLLECTION, ALTHOUGH INADEQUATE FOR
QUANTITATIVE ANALYSIS OF INDIVIDUAL COMPOUNDS, SHOWED
SIGNIFICANT DIFFERENCES IN THE CHARACTER OF ORGANIC
COMPOUNDS IN T-56 COMBUSTOR EXHAUST BETWEEN NEAT
FUELS AND FUELS CONTAINING ORGANOMETALLIC SMOKE-
ABATEMENT ADDITIVES.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A003 648 7/4 7/2
AVCO EVERETT RESEARCH LAB INC EVERETT MASS

FIELD TESTS OF A LASER RAMAN MEASUREMENT
SYSTEM FOR AIRCRAFT ENGINE EXHAUST
EMISSIONS.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT.,
OCT 74 179P LEONARD, DONALD A. ;
CONTRACT: F33615-71-C-1875
PROJ: AF-3066
MONITOR: AFAPL TR-74-100

UNCLASSIFIED REPORT

DESCRIPTORS: *EXHAUST GASES, *GAS DETECTORS, RAMAN
SPECTRA, FLUORESCENCE, GAS ANALYSIS, CARBON
MONOXIDE, CARBON DIOXIDE, NITROGEN OXIDES,
HYDROCARBONS, SMOKE, CALIBRATION, GAS TURBINES,
EMISSION SPECTRA, EXPERIMENTAL DESIGN
IDENTIFIERS: *AIRCRAFT EXHAUST, *LASER RAMAN
SPECTROSCOPY, LASER INDUCED FLUORESCENCE,
PERFORMANCE EVALUATION, SPECTROSCOPIC ANALYSIS

(U)

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LASER INDUCED RAMAN AND FLUORESCENCE MEASUREMENTS
WERE MADE IN THE EXHAUST OF A T53-L13A GAS
TURBINE ENGINE WITH A NEW FIELD PORTABLE INSTRUMENT
DEvised SPECIFICALLY FOR GAS TURBINE EXHAUST EMISSION
MEASUREMENTS. THE GAS TURBINE EXHAUST WAS ANALYZED
BY CONVENTIONAL INSTRUMENTS FOR CO, CO2, NO,
NOX, TOTAL HYDROCARBONS, SMOKE AND TEMPERATURE, AND
THESE DATA WERE USED AS A 'CALIBRATION' STANDARD FOR
THE EVALUATION OF THE LASER RAMAN INSTRUMENT. THE
MOST SEVERE PROBLEM AREA WAS LASER INDUCED
HYDROCARBON FLUORESCENCE WHEN THE EXHAUST CONTAINED
LARGE TOTAL HYDROCARBON CONCENTRATIONS. THE OVERALL
CONCLUSION WAS THAT THE LASER RAMAN METHOD SHOWS A
GOOD POTENTIAL FOR AIRCRAFT GAS TURBINE EMISSION
ANALYSIS.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A004 039

20/4

21/5

LOCKHEED MISSILES AND SPACE CO INC HUNTSVILLE ALA
HUNTSVILLE RESEARCH AND ENGINEERING CENTER

REVIEW OF EDDY VISCOSITY MODELS FOR JET
ENGINE EXHAUST/AIR MIXING,

(U)

JUN 72 50P AUDEH, BEVERLY J. ;
REPT. NO. LMSC/HREC-D225588, HREC/1251-1
CONTRACT: DAAH01-71-C-1251

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: *JET ENGINES, *EXHAUST GASES, *JET
MIXING FLOW, AXIALLY SYMMETRIC FLOW, TURBULENCE,
PLUMES, TURBULENT FLOW, MATHEMATICAL MODELS
IDENTIFIERS: *EDDY VISCOSITY

(U)

(U)

VARIOUS EDDY VISCOSITY MODELS USED FOR THE
ANALYTICAL DESCRIPTION OF FREE MIXING OF JET FLOWS
WERE EVALUATED WITH PARTICULAR REGARD TO JET EXHAUST/
ATMOSPHERE MIXING PROBLEMS. THE EDDY VISCOSITY
MODELS REVIEWED WERE THOSE OF PRANDTL, FERRI,
SCHETZ UNIFIED, DONALDSON AND GRAY, TING-
LIBBY, COHEN KINEMATIC, AND TURBULENT
KINETIC ENERGY.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A005 077 21/4 13/2 21/7
SOUTHWEST RESEARCH INST SAN ANTONIO TEX ARMY FUELS AND
LUBRICANTS RESEARCH LAB

AN INVESTIGATION OF DIESEL FUEL
COMPOSITION-EXHAUST EMISSION
RELATIONSHIPS.

(U)

DESCRIPTIVE NOTE: INTERIM REPT.,
OCT 74 23P TYLER, JOHN C. ; GRAY, J.
T. ; WEATHERFORD, W. D. , JR;
REPT. NO. AFLRL-42
CONTRACT: DAAD05-72-C-0053

UNCLASSIFIED REPORT

DESCRIPTORS: *DIESEL FUELS, NITROGEN OXIDES,
AROMATIC HYDROCARBONS, FUEL ADDITIVES,
HYDROCARBONS, CHEMICAL COMPOSITION, EXHAUST GASES,
CETANE NUMBER

(U)

IDENTIFIERS: *DIESEL ENGINE EXHAUST

(U)

THE PRESENT INVESTIGATION HAS BEEN CONDUCTED TO
STUDY THE EFFECTS OF HYDROCARBON COMPOSITION AND
ADDITIVE CONTENT OF DIESEL FUELS ON EXHAUST POLLUTANT
EMISSIONS. THE REPORTED RESULTS WERE OBTAINED
USING A TWO-CYLINDER, FOUR-STROKE CYCLE ONAN DIESEL
ENGINE-GENERATOR UNIT INSTRUMENTED FOR EXHAUST
EMISSIONS MEASUREMENTS. SEVEN DIFFERENT FUELS AND
FUEL BLENDS HAVING AROMATIC CONTENTS VARYING FROM 0
TO 74 PERCENT AND CETANE NUMBERS FROM 37 TO 71 WERE
INVESTIGATED. THE RESULTS OF THIS STUDY DEMONSTRATE
THAT INCREASING CONCENTRATIONS OF AROMATIC
HYDROCARBONS IN THE FUEL SIGNIFICANTLY INCREASE
EMISSION OF OXIDES OF NITROGEN WHILE SLIGHTLY
DECREASING THE EMISSION OF UNBURNED HYDROCARBONS,
WHILE OTHER FUEL CHARACTERISTICS, INCLUDING CETANE
NUMBER, REMAIN ESSENTIALLY CONSTANT. A FULL-SCALE,
SIX-CYLINDER MILITARY ENGINE (LDT-465) WAS USED
TO VERIFY THE AROMATICS VS NOX RELATIONSHIP
OBTAINED WITH THE ONAN MOTOR-GENERATOR UNIT.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A005 458 4/1 13/2

DEPARTMENT OF TRANSPORTATION WASHINGTON D C SYSTEMS
DEVELOPMENT AND TECHNOLOGY

REPORT OF FINDINGS. THE EFFECTS OF
STRATOSPHERIC POLLUTION BY AIRCRAFT.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

DEC 74 836P GROBECKER, A. J. ; CORONITI,

S. C. ; CANNON, R. H. , JR;

REPT. NO. DOT-TST-75-50

UNCLASSIFIED REPORT

DESCRIPTORS: *STRATOSPHERE, *AIR POLLUTION,
ATMOSPHERIC CHEMISTRY, EXHAUST GASES, TROPOSPHERE,
SUPERSONIC TRANSPORTS, CLIMATE, GEOPHYSICS,
BIOSPHERE, ULTRAVIOLET RADIATION, AIRCRAFT

(U)

IDENTIFIERS: *AIRCRAFT EXHAUST, *CLIMATIC CHANGES,
AIR POLLUTION EFFECTS(PLANTS), AIR POLLUTION
EFFECTS(ANIMALS), ECONOMIC ANALYSIS, DOT/5C,
DOT/4DZ/DA

(U)

THE REPORT ASSESSES THE IMPACT OF CLIMATIC CHANGES
WHICH MAY OCCUR FROM OPERATION OF AIRCRAFT IN THE
STRATOSPHERE. THE EFFECTS CONSIDERED INVOLVE THE
GEOPHYSICS OF THE STRATOSPHERE AND TROPOSPHERE, THE
PROPULSION EFFULENTS, THE IMPACTS OF CLIMATIC CHANGE
ON THE BIOSPHERE, AND THE ECONOMIC AND SOCIAL
MEASURES OF BIOLOGICAL CLIMATIC CHANGE. INCLUDED
AND DISCUSSED ARE REMEDIAL MEASURES BY WHICH ADVERSE
ENVIRONMENTAL EFFECTS MAY BE AVOIDED.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A006 239 13/2 1/2
AIR FORCE WEAPONS LAB KIRTLAND AFB N MEX

USAF AIRCRAFT POLLUTION EMISSION FACTORS AND
LANDING AND TAKEOFF (LTO) CYCLES. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 JUN-1 NOV 74,
FEB 75 48P NAUGLE, DENNIS F. ; NELSON,
STEVEN R. ;
REPT. NO. AFWL-TR-74-303

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPORT DATED OCT 74, AD/
A-001 826.

DESCRIPTORS: *AIR POLLUTION, *MILITARY FACILITIES,
*JET AIRCRAFT, *TAKEOFF, EMISSION CONTROL,
LANDING, FLIGHT MANEUVERS, AIRCRAFT ENGINES,
HYDROCARBONS, AIR TRAFFIC, NITROGEN OXIDES,
CARBON MONOXIDE, TABLES(DATA) (U)

ANALYSIS OF TOTAL POLLUTION EMISSIONS FROM USAF
AIRCRAFT REQUIRES BASIC DATA SUCH AS AIRCRAFT ENGINE
POLLUTION EMISSION FACTORS AND LANDING AND TAKEOFF
(LTO) TIME-IN-MODES. THE REPORT UPDATES THE LIST
OF MEASURED POLLUTION EMISSION FACTORS SPECIFIC TO
EACH MAJOR USAF AIRCRAFT ENGINE TYPE. RESULTS OF
ORIGINAL RESEARCH TO DEFINE USAF LTO CYCLE TIMES
FOR NINE OPERATIONAL MODES PER AIRCRAFT TYPE ARE
PRESENTED. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A006 290 21/5 13/2
NAVAL AIR PROPULSION TEST CENTER TRENTON N J

EFFECT OF SMOKELESS COMBUSTORS ON
PARTICULATES FROM J52 AND TF30 ENGINES.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,
JAN 75 32P HORLING, JAMES E. ;
REPT. NO. NAPTC-PE-48
PROJ: NAEC-PO-4-8012

UNCLASSIFIED REPORT

DESCRIPTORS: *GAS TURBINES, *PARTICLES, *EXHAUST
GASES, *COMBUSTORS, CONCENTRATION (COMPOSITION)
IDENTIFIERS: J-52-P-8B ENGINES, J-52-P-6B
ENGINES, J-52-P-408 ENGINES, F-30 ENGINES, TF-
30-P-6C ENGINES, TF-30-P-408 ENGINES, TF-30
ENGINES, J-52 ENGINES, *JET ENGINE EXHAUST,
SMOKELESS COMBUSTORS, AIR POLLUTION CONTROL

(U)

(U)

PARTICULATE SAMPLES USING A MODIFIED LA
SAMPLING TRAIN WERE OBTAINED FROM FIVE J52-P-
8B, THREE J52-P-6B AND ONE EACH OF J52-P-
408, TF30-P-6C AND TF30-P-408 GAS TURBINE
ENGINES. THE SAMPLES OBTAINED WERE DIVIDED INTO
SOLID PARTICULATES, SOLVENT SOLUBLE MATERIAL AND
WATER SOLUBLE MATERIAL. RESULTS INDICATE THAT
SMOKELESS COMBUSTORS IN THE J52 ENGINE REDUCE
PARTICULATES BY 20%. RESULTS OF TF30 TESTS ARE
INCONCLUSIVE BECAUSE OF LIMITED SAMPLING. THE
IMPACT OF SMOKELESS COMBUSTOR ON STATIONARY SOURCE
REGULATIONS WAS ALSO ASSESSED.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A006 802 21/2 13/2
AIR FORCE WEAPONS LAB KIRTLAND AFB N MEX

ENVIRONMENTAL ANALYSIS OF POSSIBLE SULFUR
INCREASES IN USAF JET FUELS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

FEB 75 22P NAUGLE, DENNIS F. ;
REPT. NO. AFWL-TR-74-215
PROJ: AF-2103

UNCLASSIFIED REPORT

DESCRIPTORS: *JET ENGINE FUELS, *AIR POLLUTION,
*SULFUR OXIDES, *COMBUSTION PRODUCTS, STANDARDS,
SULFUR, CHEMICAL COMPOSITION, COSTS,
ENVIRONMENTS, AIR FORCE PROCUREMENT, FEASIBILITY
STUDIES, TURBOJET ENGINES, OXIDATION

(U)

IDENTIFIERS: JET ENGINE EXHAUST, JP-4 FUEL, AIR
POLLUTION STANDARDS

(U)

THIS ANALYSIS ADDRESSES THE QUESTION OF WHETHER
ENVIRONMENTAL CONSIDERATIONS SHOULD BE THE LIMITING
CONSTRAINT TO POSSIBLE INCREASES IN SULFUR CONTENT OF
USAF JET FUELS. SUCH INCREASES ARE PROPOSED IN
ORDER TO INCREASE THE AVAILABILITY OF JET FUELS SUCH
AS JP-4. THE CURRENT AVERAGE SULFUR CONTENT OF
0.05% BY WEIGHT AND TWO HYPOTHESIZED LEVELS OF 0.4
PERCENT AND 1.0 PERCENT ARE ANALYZED IN THIS STUDY.
AIRCRAFT EMISSIONS AND METEOROLOGICAL CONDITIONS
AROUND AN AIRBASE ARE MAXIMIZED TO PRODUCE PREDICTED
'WORST-CASE' AMBIENT AIR QUALITY LEVELS.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A006 807 13/2
AIR FORCE WEAPONS LAB KIRTLAND AFB N MEX

A GENERALIZED AIR QUALITY ASSESSMENT
MODEL FOR AIR FORCE OPERATIONS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 1 MAY 73-1 NOV 74,
FEB 75 170P ROTE, DONALD M. WANGEN,
LAWRENCE E. ;
REPT. NO. AFWL-TR-74-304

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED BY ARGONNE NATIONAL
LAB., ILL.

DESCRIPTORS: *AIR QUALITY, *AIR FORCE OPERATIONS,
AIR POLLUTION, MILITARY FACILITIES, ASSESSMENT,
MATHEMATICAL MODELS, COMPUTER PROGRAMMING,
DISTRIBUTION, PREDICTIONS, METEOROLOGICAL DATA,
HYDROCARBONS, EXHAUST GASES, DIURNAL VARIATIONS,
SOURCES, CONCENTRATION(CHEMISTRY)

(U)

IDENTIFIERS: *AIR POLLUTION ABATEMENT,
*ENVIRONMENTAL IMPACTS

(U)

THE AIR QUALITY ASSESSMENT MODEL (AQAM)
IS DESIGNED TO SERVE AS A GENERALIZED MODEL THAT CAN
BE USED TO ASSESS THE IMPACT OF AIR FORCE
OPERATIONS ON THE AIR ENVIRONMENT AT THE AIR BASE
LEVEL. THIS DOCUMENT CONSTITUTES THE TECHNICAL
REPORT TO THIS EFFORT AND, AS SUCH, CONTAINS A
DISCUSSION OF THE METHODOLOGIES INCORPORATED INTO THE
COMPUTER PROGRAMS FOR THE COMPUTATION OF POLLUTANT
EMISSIONS AND THE SUBSEQUENT DISPERSAL OF THESE
POLLUTANTS IN THE AMBIENT AIR. SIMULATION OF
AIRCRAFT OPERATIONS, TEMPORAL AND SPATIAL MODELING OF
POLLUTANT EMISSIONS, DISPERSION MODELS BASED ON THE
GAUSSIAN PLUME FORMULATION AND OTHER SUBJECTS
GERMANE TO THE MODEL ARE DISCUSSED. THE PROGRAM
CONTAINS A SHORT-TERM DISPERSION MODEL FOR HOURLY
CALCULATIONS AND A CLIMATOLOGICAL TYPE MODEL BASED ON
THE 'AIR QUALITY DISPLAY MODEL' FOR LONG-TIME
AVERAGE CONCENTRATION CALCULATIONS.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A008 088 6/20 13/2
SOUTHWEST RESEARCH INST SAN ANTONIO TEX ARMY FUELS AND
LUBRICANTS RESEARCH LAB

TOXICITY OF ENGINE EXHAUST GASES DIESEL-
BROMOCHLOROMETHANE FUEL BLEND.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

FEB 75 38P JOHNSTON, ALAN A. ; SPRINGER,
KARL ; JOHNSON, DON ; BOENIG, DENNIS ; NEWMAN,
FRANK ;

REPT. NO. AFLRL-51

CONTRACT: DAAD05-72-C-0053

UNCLASSIFIED REPORT

DESCRIPTORS: *TOXICOLOGY, *HALOGENATED HYDROCARBONS,
*DIESEL FUELS, *EXHAUST GASES, HYDROCARBONS,
BROMINE COMPOUNDS, CHLORINE COMPOUNDS, DIESEL
ENGINES, FUEL ADDITIVES, HISTOLOGY, PATHOLOGY,
BIOASSAY, LABORATORY ANIMALS, COMBUSTION PRODUCTS,
AIR POLLUTION

(U)

IDENTIFIERS: *METHANE/BROMO-CHLORO,

*BROMOHYDROCARBONS, *CHLOROHYDROCARBONS

(U)

A SINGLE CYLINDER DIESEL ENGINE WAS USED TO
GENERATE EXHAUST GASES FORMED DURING THE COMBUSTION
OF DIESEL FUEL CONTAINING FIVE PERCENT BY VOL
BROMOCHLOROMETHANE, AS A FUEL ADDITIVE. AN EXHAUST
GAS DILUTION SYSTEM PERMITTED EXPOSURE OF SELECTED
ANIMAL SPECIES TO THE PRODUCTS OF COMBUSTION DILUTED
WITH FRESH AIR AT AIR/GAS RATIOS OF 10:1, 20:1,
50:1, 75:1 AND 100:1. ACUTE TOXICITY OF THE
EXHAUST COMPONENTS IN THE SELECTED ANIMALS WAS
DEFINED DURING A 4-HR EXPOSURE TEST, FOLLOWED BY A
14-DAY OBSERVATION PERIOD. HISTOPATHOLOGY STUDIES
OF ALL MAJOR ORGANS WERE ALSO ACCOMPLISHED. EXHAUST
GAS SAMPLES WERE ANALYZED FOR ORGANIC AND INORGANIC
HALOGEN COMPOUNDS.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A009 133 21/5 13/2
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX

HYDROCARBON CONSTITUENTS OF T-56 COMBUSTOR
EXHAUST.

(U)

DESCRIPTIVE NOTE: PROGRESS REPT. DEC 73-DEC 74,
APR 75 17P CONKLE, JAMES P. ; LACKEY,
WILLIAM W. ; MILLER, RICHARD L. ;
REPT. NO. SAM-TR-75-8

UNCLASSIFIED REPORT

DESCRIPTORS: *HYDROCARBONS, *EXHAUST GASES, *GAS
TURBINES, *AIR POLLUTION, COMBUSTION, JET ENGINE
FUELS, PRESSURE, GAS ANALYSIS, GAS CHROMATOGRAPHY,
MASS SPECTROSCOPY, JET AIRCRAFT, TURBOJET ENGINES (U)
IDENTIFIERS: JT-8D ENGINES, T-56 ENGINES, GAS
SAMPLING, AIR POLLUTION SAMPLING, JP-4, JP-5
FUEL, JP-6 FUEL, JET ENGINE EXHAUST (U)

CRYOGENIC SAMPLING WAS USED TO SAMPLE HYDROCARBON
EXHAUST FROM A T-56 TURBINE ENGINE COMBUSTOR UNDER
CONDITIONS SIMULATING IDLE POWER OF SEVERAL DIFFERENT
AIRCRAFT. PARAMETERS STUDIED WERE FUEL TYPE--JP4,
JP5, AND JP8--AND THE COMBUSTOR OPERATING
PRESSURE--15, 33, 50, AND 75 PSIG. SAMPLES WERE
ANALYZED WITH A GAS CHROMATOGRAPH-MASS SPECTROMETER-
DATA SYSTEM WHICH SEPARATED 148 COMPOUNDS; THE
HYDROCARBON CONTENT OF THE EXHAUST WAS INVERSELY
PROPORTIONAL TO THE INLET PRESSURE AND DIRECTLY
PROPORTIONAL TO THE BOILING POINT AND DENSITY OF THE
FUEL TYPE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A009 281

21/7

13/6

ARMY MATERIEL COMMAND TEXARKANA TEX INTERN TRAINING
CENTER

EVALUATION OF THE EFFECTS OF ENGINE
DETERIORATION ON GASOLINE EXHAUST
EMISSIONS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

APR 75 50P PAYNE, ALLEN L. ;

REPT. NO. USAMC-ITC-02-08-75-101

UNCLASSIFIED REPORT

DESCRIPTORS: *EXHAUST GASES, *RECIPROCATING ENGINES,
*DETERIORATION, *WEAR, GASOLINE, AUTOMOTIVE
ENGINEERING, FUEL ADDITIVES, SPARK IGNITION ENGINES,
TEST EQUIPMENT, HYDROCARBONS, PREDICTIONS

(U)

IDENTIFIERS: *AUTOMOBILE EXHAUST, TETRAETHYL LEAD,
AIR FUEL RATIO, AUTOMOBILE ENGINES

(U)

THIS PAPER DISCUSSES THE DESIGN OF AN EXPERIMENT TO
DETERMINE THE RELATIONSHIP BETWEEN GASOLINE EXHAUST
EMISSIONS AND ENGINE DETERIORATION. THE
EXPERIMENTAL DESIGN IS SPECIFICALLY AIMED AT EXHAUST
EMISSION TRENDS THROUGHOUT ENGINE LIFE. THE
ENGINES USED FOR THIS EXPERIMENT ARE FOUR 4 1/2 H.P.
WISCONSIN, MODEL MBKND, AIR COOLED,
RECIPROCATING GASOLINE ENGINES. THE EXPERIMENTAL
TECHNIQUES PRESENTED PROVIDE A GOOD FOUNDATION FOR
FURTHER RESEARCH.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A009 882 13/2
ARGONNE NATIONAL LAB ILL

AIRPORT VICINITY AIR POLLUTION STUDY:
THE IMPACT OF MODIFIED AIRCRAFT TAXI
PROCEDURES ON AIRPORT AIR QUALITY.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

DEC 74 185P CIRILLO, RICHARD R. ; TSCHANZ,
JOHN F. ; CAMAIONI, JOSEPH E. ;
CONTRACT: DOT-FA71WAI-223
MONITOR: FAA-RD 74-212

UNCLASSIFIED REPORT

DESCRIPTORS: *TURBOJET ENGINES, *EXHAUST GASES,
*TAXIING, *AIRPORTS, FEASIBILITY STUDIES, AIR
POLLUTION, AIRCRAFT ENGINES, MODIFICATION,
MATHEMATICAL MODELS, SIMULATION, METHODOLOGY,
HYDROCARBONS, CARBON MONOXIDE, RATES

(U)

IDENTIFIERS: AIR POLLUTION ABATEMENT, DOT/
5C

(U)

THIS REPORT PRESENTS AN ANALYSIS OF AN AIRCRAFT
GROUND OPERATION CONTROL MEASURE DESIGNED TO REDUCE
AIR POLLUTANT EMISSIONS. IN A DEMONSTRATION
PROGRAM CONDUCTED AT THE ATLANTA AIRPORT,
TURBINE-POWERED AIR CARRIER AIRCRAFT TAXIED ON ONE
LESS ENGINE THAN NORMAL WITH THE REMAINING ENGINES AT
HIGHER THRUST SETTINGS. OBSERVATIONS MADE AT THE
AIRPORT DURING THE FIELD TEST ARE USED TO ESTIMATE
THE TOTAL REDUCTION IN ENGINE OPERATING TIME AND THE
EQUIVALENT REDUCTION IN EMISSIONS. THE ARGONNE
AIRPORT VICINITY AIR POLLUTION MODEL IS
USED TO CALCULATE THE IMPROVEMENT IN AIR QUALITY
RESULTING FROM THE TEST PROGRAM. THE MODEL IS A
GAUSSIAN-PLUME-TYPE DISPERSION MODEL THAT UTILIZES
POINT, AREA, AND LINE SOURCE FORMULATIONS TO SIMULATE
THE COMPLEX AIRPORT SYSTEM. COMPARISON IS MADE
WITH AIR QUALITY DATA COLLECTED BOTH BEFORE AND
DURING THE MODIFIED TAXI TEST FOR MODEL
VALIDATION.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A009 897 13/6
PURDUE UNIV LAFAYETTE IND AUTOMATIC CONTROL CENTER

OPTIMIZATION OF AUTOMOTIVE ENGINE EFFICIENCY
AND EMISSIONS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
APR 75 31P PRABHAKAR, R. ; GOODSON, R.
E. ; CITRON, STEPHEN J. ;
REPT. NO. ACC-75-1, TR-7
CONTRACT: N00014-67-A-0226-0012
PROJ: NR-041-423

UNCLASSIFIED REPORT

DESCRIPTORS: *AUTOMOTIVE ENGINEERING, *EMISSION
CONTROL, EXHAUST GASES, RECIRCULATION, FUEL AIR
RATIO, SPARK IGNITION, PERFORMANCE TESTS, AIR
POLLUTION, FUEL CONSUMPTION, CONTROL THEORY (U)
IDENTIFIERS: AUTOMOBILE EXHAUST, OPTIMIZATION (U)

EXPERIMENTAL CURVE FITTING TECHNIQUES ARE USED TO
MODEL ENGINE EMISSIONS AS A FUNCTION OF ENGINE
OPERATING VARIABLES. USING THIS MODEL, THE OPTIMAL
CONTROL INPUTS FOR A GIVEN VEHICLE AND SPECIFIED TEST
CYCLE ARE COMPUTED. AIR-FUEL RATIO, SPARK ADVANCE
AND EXHAUST GAS RECIRCULATION WERE CONSIDERED AS THE
CONTROL VARIABLES. THE RESULTS OF THIS STUDY SHOW
THAT CONSIDERABLE IMPROVEMENT OVER STOCK CAR
PERFORMANCE CAN BE OBTAINED IF THESE VARIABLES ARE
OPTIMALLY CONTROLLED. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A013 533 13/2
ARGONNE NATIONAL LAB ILL

A GENERALIZED AIR QUALITY ASSESSMENT
MODEL FOR AIR FORCE OPERATIONS--AN
OPERATOR'S GUIDE.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 1 MAY 73-1 JAN 74,
JUL 74 88P WANGEN, LAWRENCE E. ;ROTE,
DONALD M. ;
PROJ: AF-1900, AFWL-74-105
MONITOR: AFWL TR-74-54

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPERSEDES REPORT DATED JUN 74,
AD-784 809.

DESCRIPTORS: *AIR POLLUTION, *MILITARY FACILITIES,
*AIR QUALITY, AIRCRAFT, AIRPORTS, MANUALS,
COMPUTER PROGRAMS, METEOROLOGICAL DATA, CARBON
MONOXIDE, HYDROCARBONS, NITROGEN OXIDES,
PARTICULATES, SULFUR OXIDES, AIR FORCE
OPERATIONS, COMPUTERIZED SIMULATION

(U)

THE ENERGY AND ENVIRONMENTAL DIVISION OF
ARGONNE NATIONAL LABORATORY HAS DEVELOPED A SET
OF COMPUTER PROGRAMS UNDER CONTRACT TO THE UNITED
STATES AIR FORCE WEAPONS LABORATORY.
THIS PACKAGE IS DESIGNED TO SERVE AS A GENERALIZED
MODEL THAT CAN BE USED TO ASSESS THE IMPACT OF AIR
FORCE OPERATIONS ON THE AIR ENVIRONMENT AT THE AIR
BASE LEVEL. THIS REPORT IS A USER'S MANUAL FOR
THESE COMPUTER PROGRAMS AND AS SUCH OUTLINES THE
OVERALL FLOW OF THE PROGRAMS, THE LINKS BETWEEN
PROGRAMS AND THE INPUT DATA REQUIRED TO IMPLEMENT
EACH PROGRAM.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL No. 000M1

AD-A013 933 21/2 7/4
AIR FORCE AERO PROPULSION LAB WRIGHT-PATTERSON AFB
OHIO

N02 COMBUSTOR EMISSIONS INVESTIGATION. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT. OCT 73-FEB 75,
MAY 75 68P WALSH, DENNIS E. ;
REPT. NO. AFAPL-TR-75-46
PROJ: AF-3066
TASK: 306614

UNCLASSIFIED REPORT

DESCRIPTORS: *NITROGEN OXIDES, *COMBUSTION,
*EXHAUST GASES, AIRCRAFT ENGINES, REACTION
KINETICS, CHEMICAL REACTIONS, AIR POLLUTION,
OXIDATION (U)
IDENTIFIERS: *NITROGEN DIOXIDE, AIRCRAFT EXHAUST,
CHEMICAL REACTION MECHANISMS (U)

THIS REPORT PRESENTS THE RESULTS OF AN EXPERIMENTAL PROGRAM INVESTIGATING THE POSSIBILITY OF N02 FORMATION WITHIN THE BURNERS OF AIRCRAFT GAS TURBINE ENGINES. AN ENVIRONMENT RESEMBLING THE COOLER REGIONS OF THE COMBUSTOR (E.G., THE COOLING LAYER) WAS ESTABLISHED TO TEST A PROPOSED MECHANISM INVOLVING: (1) TRANSPORT OF NO FROM A 'HOT' COMBUSTOR SECTION INTO A REGION MORE THERMODYNAMICALLY FAVORABLE FOR N02 FORMATION, E.G., THE COOLING LAYER, AND (2) SUBSEQUENT REACTION OF THE NO TO FORM N02 EITHER HOMOGENEOUSLY OR UNDER THE INFLUENCE OF CATALYSIS (HETEROGENEOUS OR HOMOGENEOUS). RESULTS OF EXPERIMENTS CONDUCTED EXAMINING THIS POSSIBILITY REVEALED THAT UNDER THE ACTION OF HYDROCARBONS, SIGNIFICANT AMOUNTS OF NO CAN BE OXIDATED TO N02. THE ROLE OF DRIERITE ON N02 ADSORPTION WAS ALSO INVESTIGATED. AN UNVERIFIED EXPLANATION OF THIS PHENOMENON IS PRESENTED INVOLVING REACTION OF N02 AND H2O TO HNO3 AND NO. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A016 063 21/2 21/5
CALIFORNIA-UNIV-IRVINE-COMBUSTION LAB.

MECHANISMS OF EXHAUST POLLUTANTS AND PLUME
FORMATION IN CONTINUOUS COMBUSTION.

(U)

DESCRIPTIVE NOTE: INTERIM REPT. 1 MAY 74-28 FEB 75,
MAY 75 27P SAMUELSEN, G. S. ; PECK, R.

E. ;

REPT. NO. UCI-ARTR-75-2
CONTRACT: AF-AFOSR-2710-74
PROJ: AF-6813, AF-9711
TASK: 681308, 971102
MONITOR: AFOSR TR-75-1288

UNCLASSIFIED REPORT

DESCRIPTORS: *EXHAUST GASES, *PLUMES, *COMBUSTION,
GAS TURBINES, SCIENTIFIC RESEARCH, AIR
POLLUTION

(U)

THE INVESTIGATION OF EXHAUST POLLUTANT AND PLUME
FORMATION IN CONTINUOUS COMBUSTION IS A COMBINED
ANALYTICAL AND EXPERIMENTAL STUDY OF TURBULENT,
BACKMIXED COMBUSTION IN GAS TURBINES. EXPERIMENTS
ARE BEING CONDUCTED OPERATING WITH PREMIXED METHANE/
AIR AND PROPANE/AIR REACTANTS. THEORETICALLY
PREDICTED PROFILES OF THE FLOW PROPERTIES ARE BEING
SYSTEMATICALLY COMPARED WITH EXPERIMENTALLY
DETERMINED PROFILES. THE REPORT DISCUSSES THE
FOLLOWING RESEARCH: THE EXPERIMENTAL FACILITY
HAS BEEN MODIFIED AND UPDATED TO ACCOMMODATE THE
CURRENT STUDY; LIMITED EMISSION AND VELOCITY DATA
HAVE BEEN OBTAINED; AND THE ANALYTICAL PHASE HAS BEEN
DIRECTED TO UPDATING THE TURBULENCE MODEL USED IN THE
ORIGINAL (PISTEP I) ORC NUMERICAL PROGRAM AND
ADAPTING A P-V, 3-DIMENSIONAL PROGRAM DUBBED TEACH
TO THE ORC SYSTEM.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A016 422 13/2

ENVIRONMENTAL HEALTH LAB MCCLELLAN AFB CALIF.

AN ENVIRONMENTAL EVALUATION OF ACID
SCRUBBERS; BUILDING 628, MCCLELLAN AFB
CA.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

AUG 75 37P JACKSON, JERRY W. ;

NORMINGTON, WILLIAM E. ;

REPT. NO. EHL-M-72M-11

PROJ: EHL-M-AAF-460

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR POLLUTION, *SCRUBBERS, ACIDS,
PROCESSING, HYDROCHLORIC ACID, NITRIC ACID,
PERCHLORIC ACID, CHEMICAL REACTIONS, CELLULOSE,
EXHAUST GASES, EMISSION, VAPORS, ENVIRONMENTS,
PERFORMANCE(ENGINEERING), EFFICIENCY, TEST
METHODS

(U)

IDENTIFIERS: LOCAL STUDIES, CHEMICAL
LABORATORIES

(U)

AN ENVIRONMENTAL EVALUATION WAS CONDUCTED OF AN
OPERATION IN WHICH NITRIC, PERCHLORIC, AND
HYDROCHLORIC ACID VAPORS AND AEROSOLS ARE GENERATED.
THE EVALUATION WAS REQUESTED TO DETERMINE WHY A
VISIBLE WHITE PLUME EXISTED AT THE EXHAUST OF A WET
SCRUBBER. THE WHITE PLUME WAS FORMED REGARDLESS OF
METEOROLOGICAL CONDITIONS WHEN ACID VAPORS AND
AEROSOLS WERE GENERATED. THE EVALUATION INCLUDED A
SCRUBBER EFFICIENCY STUDY, AN ENVIRONMENTAL
ASSESSMENT AND AN AIR POLLUTION REGULATION COMPLIANCE
TESTS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A016 447 14/2 7/4 21/5
NATIONAL AVIATION FACILITIES EXPERIMENTAL CENTER ATLANTIC
CITY N J

SULFUR OXIDE MEASUREMENT IN AIRCRAFT
TURBINE ENGINE EXHAUST, (U)

SEP 75 15P SLUSHER, GERALD R. ;
REPT. NO. FAA-NA-75-10
PROJ: FAA-201-521-010
MONITOR: FAA-RD 75-101

UNCLASSIFIED REPORT

DESCRIPTORS: *EXHAUST GASES, SULFUR OXIDES,
AIRCRAFT ENGINES, GAS TURBINES, AIR POLLUTION,
JET AIRCRAFT, CHEMICAL ANALYSIS, TURBOFAN ENGINES (U)
IDENTIFIERS: *AIRCRAFT EXHAUST, *SULFUR DIOXIDE,
*SULFUR TRIOXIDE, GAS SAMPLING, DOT/5C (U)

A LIMITED INVESTIGATION WAS CONDUCTED TO MEASURE
THE OXIDES OF SULFUR IN AIRCRAFT TURBINE ENGINE
EXHAUST. THE OBJECTIVE WAS TO ESTABLISH THE RATIO
OF SULFUR TRIOXIDE (SO₃) TO SULFUR DIOXIDE
(SO₂) TO BE USED IN SUPPORT OF THE CLIMATIC
IMPACT ASSESSMENT PROGRAM. THE SO₃ CONCENTRATION
WAS FOUND TO BE 13.8 PERCENT OF THE SO₂
CONCENTRATION AS DETERMINED BY WET CHEMISTRY
ANALYSIS. SULFUR RECOVERED IN THE SAMPLES WAS
APPROXIMATELY 50 PERCENT OF THE TOTAL SULFUR IN THE
FUEL. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A016 763 21/4
AIR FORCE AERO. PROPULSION LAB WRIGHT-PATTERSON AFB
OHIO

ASSESSMENT OF JP-8 AS A REPLACEMENT FUEL FOR
THE AIR FORCE STANDARD JET FUEL JP-4.
PART I. ASSESSMENT OF JP-8/JP-4 FUEL IN
NONCOMBAT ENVIRONMENT. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 72-APR 75,
JUN 75 92P BEERY, G. T. ; CLODFELTER, R.
G. ; GANDEE, G. W. ; SPEAR, D. M. ; WIGHT, D.
C. ;
REPT. NO. AFAPL-TR-74-71-PT-1
PROJ: AF-3048
TASK: 304807

UNCLASSIFIED REPORT

DESCRIPTORS: *JET ENGINE FUELS, PHYSICAL PROPERTIES,
FLAMMABILITY, TEST METHODS, ACCEPTABILITY,
ASSESSMENT, STANDARDS, COSTS, FIRE SAFETY, AIR
POLLUTION, STORAGE (U)
IDENTIFIERS: AIRCRAFT EXHAUST, JP-4 FUEL, JP-8
FUEL, JP-5 FUEL (U)

THIS REPORT IS AN ASSESSMENT OF JP-8 AS A
REPLACEMENT FUEL FOR THE AIR FORCE STANDARD JET
FUEL JP-4. ALL FACETS OF THE PROBLEM ARE
EXAMINED INCLUDING FIRE SAFETY UNDER COMBAT AND
NONCOMBAT CONDITIONS, CRASH FIRE SAFETY, STORAGE,
HANDLING AND MAINTENANCE SAFETY, LABORATORY TESTING,
GUNFIRE TESTING, FLIGHT TESTING, COST AND
AVAILABILITY, AND IMPACT ON CURRENT AIR FORCE
WEAPONS SYSTEMS. THE REPORT CONCLUDES THAT A
SIGNIFICANT IMPROVEMENT IN OVERALL FIRE SAFETY COULD
BE ACHIEVED BY CONVERSION TO JP-8 HOWEVER,
ADDITIONAL INVESTIGATION INTO PROBLEMS RELATED TO LOW
TEMPERATURE GROUND START AND ALTITUDE RELIGHT SHOULD
BE ACCOMPLISHED PRIOR TO CONVERSION. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A016 992 21/9.2 7/4

SCHOOL OF AEROSPACE MEDICINE-BROOKS AFB TEX

COULOMETRIC MEASUREMENT OF HCL IN SPACE
LAUNCH VEHICLE EXHAUST.

(U)

DESCRIPTIVE NOTE: PROGRESS REPT. JUL 73-JUN 74,
SEP 75 18P LEGDAY, ROBERT C. ; MILLER,
RICHARD L. ; BEATTY, DAVID C. ;

REPT. NO. SAM-TR-75-27

PROJ: AF-7164

TASK: 716416

UNCLASSIFIED REPORT

DESCRIPTORS: *HYDROGEN CHLORIDE, EXHAUST GASES,
COLORIMETRIC ANALYSIS, PLUME DETECTION, SOLID
PROPELLANT ROCKET ENGINES, AIR POLLUTION,
MONITORING, LAUNCH VEHICLES

(U)

IDENTIFIERS: *MICROCOULOMETERS, *AIR POLLUTION
DETECTION, *ROCKET EXHAUST, TITAN 3

(U)

LARGE SOLID-PROPELLANT ROCKET MOTORS RELEASE
QUANTITIES OF HYDROGEN CHLORIDE (HCL) GAS AS A
PRODUCT OF COMBUSTION. SINCE HCL IS A POTENTIAL
ENVIRONMENTAL HAZARD, THE MEASUREMENT OF ITS
CONCENTRATION IN THE STABILIZED ROCKET EXHAUST GROUND
CLOUD BECOMES IMPORTANT TO VALIDATE DIFFUSION
ESTIMATES GOVERNING LAUNCH CONSTRAINTS, AS WELL AS TO
ASSESS THE BIOLOGIC AND ECOLOGIC IMPACT OF HCL
REACTIONS WHICH MAY OCCUR IN THE EXHAUST PLUME.
THIS PAPER DESCRIBES THE DEVELOPMENT AND TEST OF A
MICROCOULOMETER FOR DETECTION OF HCL IN ROCKET
EXHAUST, AND PRESENTS ANALYTICAL RESULTS FROM TITAN
III LAUNCH VEHICLE MONITORING STUDIES AT CAPE
CAVERAL, FLORIDA, AND VANDENBERG AIR
FORCE BASE, CALIFORNIA.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A017 296 7/4

ARMY MISSILE RESEARCH DEVELOPMENT AND ENGINEERING LAB
REDSTONE ARSENAL ALA ADVANCED SENSORS DIRECTORATE

MEASUREMENTS OF INFRARED RADIATION
CHARACTERISTICS OF A SMALL KEROSENE/GASEOUS
OXYGEN HOT GAS GENERATOR.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUL 75 102P JACKSON, H. TRACY, JR;
REPT. NO. RE-76-1

UNCLASSIFIED REPORT

DESCRIPTORS: *INFRARED DETECTION, *GAS GENERATOR
ENGINES, *RADIANCE, *EXHAUST PLUMES, SHOCK WAVES,
MEASUREMENT, KEROSENE, OXYGEN, ATOMS,
LABORATORY EQUIPMENT, AXIALLY SYMMETRIC FLOW,
EXHAUST GASES

(U)

IDENTIFIERS: JET ENGINE EXHAUST

(U)

EXPERIMENTAL MEASUREMENTS OF THE SPATIAL AND
SPECTRAL DISTRIBUTION OF INFRARED RADIATION EMITTED
FROM THE EXHAUST PLUME OF A SMALL KEROSENE/GASEOUS
OXYGEN HOT GAS GENERATOR OPERATING AT AMBIENT
CONDITIONS WERE OBTAINED FOR OXIDIZER/FUEL RATIOS
BETWEEN 1.15 AND 3.0. THE AXIAL DISTRIBUTION OF
INFRARED RADIANT INTENSITY WAS OBSERVED TO HAVE A
SERIES OF MAXIMA AND MINIMA (HOT SPOTS) WHICH
CORRESPONDED TO THE LOCATION OF SHOCK WAVES OR MACH
DISCS IN THE CENTRAL PORTION OF THE EXHAUST PLUME.
FOR OXIDIZER/FUEL RATIOS LESS THAN 3, THE RADIATION
PEAK OCCURRED MANY NOZZLE RADII DOWNSTREAM AND THE
MAGNITUDE OF THE RADIANT INTENSITY WAS LARGER THAN
THE PEAK VALUE BEHIND THE FIRST REFLECTED SHOCK WAVE.
FOR OXIDIZER/FUEL RATIOS GREATER THAN 3, THE PEAK
RADIATION OCCURRED IN THE FIRST SHOCK-HEATED ZONE.
IT WAS OBSERVED THAT EVEN THOUGH THE SHOCK HEATED
REGIONS PRODUCED LOCALLY VERY HIGH VALUES OF THE
RADIANT INTENSITY, THE MAJORITY OF THE TOTAL
RADIATION IS EMITTED FROM THE AFTERBURNING PLUME
DOWNSTREAM OF THE SHOCK ZONES. THE SPECTRAL
DISTRIBUTION MEASUREMENTS INDICATED THAT THE
PRINCIPAL RADIATION WAS IN THE 4.4 MICROMETER BAND
FROM HOT WATER VAPOR AND CARBON DIOXIDE.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A017 652 13/2
NAVAL SURFACE WEAPONS CENTER WHITE OAK LAB SILVER SPRING
MD

REMOVAL OF TETRANITROMETHANE FROM AIR
STREAMS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,
OCT 75 21P GILLIGAN, WILLIAM H. ; HALL,
THOMAS N. ;
REPT. NO. NSWC/WOL/TR-75-128
PROJ: NSWC-1272/L01-23

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR POLLUTION, *METHANE, EXPLOSIVES,
TNT, NITROGEN OXIDES, REMOVAL, EXHAUST GASES,
SCRUBBERS

(U)

IDENTIFIERS: *TETRANITROMETHANE,
POLYNITROALIPHATICS

(U)

DURING THE MANUFACTURE OF TNT, ONE OF THE SIDE
PRODUCTS FORMED IN RELATIVELY SMALL AMOUNT IS
TETRANITROMETHANE (TNM). IN THE PAST IT HAS BEEN
THE PRACTICE TO VENT THE TNM ALONG WITH SOME
NITROGEN OXIDES (MAINLY NO) TO THE ATMOSPHERE.
HOWEVER, BECAUSE OF PRESENT-DAY AWARENESS OF
POLLUTION PROBLEMS, EPA REGULATIONS NOW REQUIRE THE
COMBINED NO/TNM PRESENT IN THE EXHAUST GASES TO
BE BELOW 100 PPM. IN ORDER TO MEET THIS REQUIREMENT
MOST OF THE TNM MUST BE REMOVED. SINCE TNM AS A
PRECURSOR OF NITROFORM, CAN BE USED FOR THE SYNTHESIS
OF A WIDE VARIETY OF POLYNITROALIPHATICS A DESIRABLE
SOLUTION WOULD BE TO COLLECT THE TNM AS SUCH OR AS
NITROFORM THEREBY REDUCING THE COST OF POLLUTION
ABATEMENT.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A018 193 21/5
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

AN INVESTIGATION OF THE FLOW IN TURBOJET
TEST CELL AUGMENTERS.

(U)

DESCRIPTIVE NOTE: MASTER'S THESIS,
SEP 75 81P HAYES, JACK DOUGLAS ;
REPT. NO. NPS-57NT75101

UNCLASSIFIED REPORT

DESCRIPTORS: *JET ENGINES, *TEST FACILITIES,
*EXHAUST GASES, *AIR POLLUTION, AIR ENTRAINMENT,
AUGMENTATION, FLOW FIELDS, COMPUTER PROGRAMMING,
THESES

(U)

A TWO-DIMENSIONAL ELLIPTIC COMPUTER MODEL WAS
ADAPTED TO THE SOLUTION OF THE FLOW FIELD IN A
TURBOJET TEST CELL SECTION WHICH CONTAINED THE
ENGINE EXHAUST DUCT AND AUGMENTER TUBE. VARIOUS
ENGINE POWER SETTINGS, AUGMENTATION RATIOS, AND
AUGMENTER GEOMETRIES WERE INVESTIGATED. FLOW
VISUALIZATION AND STATIC PRESSURE RECOVERY WERE
PRIMARY OBJECTIVES SUBJECT TO SPECIFIED ENGINE POWER
SETTINGS AND AUGMENTATION RATIOS. CAPABILITIES AND
LIMITATIONS OF THE MODEL ARE DISCUSSED.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A019 094 21/2 774
GENERAL ELECTRIC CO CINCINNATI OHIO AIRCRAFT ENGINE
GROUP

DEVELOPMENT OF EMISSIONS MEASUREMENT
TECHNIQUES FOR AFTERBURNING TURBINE ENGINES. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 1 APR 73-31
MAR 75,

OCT 75 348P LYON, T. F. ; COLLEY, W. C.
; KENWORTHY, M. J. ; BAHR, D. W. ;
REPT. NO. R75-AEG457
CONTRACT: F33615-73-C-2047
PROJ: AF-1900
MONITOR: AFAPL TR-75-52

UNCLASSIFIED REPORT

DESCRIPTORS: *JET ENGINES, *AIRCRAFT ENGINES,
*EXHAUST GASES, *AFTERBURNERS, *AIR POLLUTION,
SAMPLING, MEASUREMENT, MATHEMATICAL MODELS,
CONCENTRATION (COMPOSITION), CARBON MONOXIDE,
HYDROCARBONS, FLOW RATE, NITROGEN OXIDES,
PROBES, REACTION KINETICS, PLUMES, COMBUSTION (U)
IDENTIFIERS: J85-5 ENGINES, J79-15 ENGINES, *GAS
SAMPLING (U)

DETAILED EMISSIONS MEASUREMENTS WERE MADE
THROUGHOUT THE PLUMES OF J85-5 AND J79-15 ENGINES
AT MILITARY POWER AND THREE AFTERBURNING POWER
LEVELS. CALCULATIONS OF INTEGRATED POLLUTANT FLOW
RATES AT VARIOUS AXIAL STATIONS SHOWED THAT
HYDROCARBONS ARE MOST REACTIVE IN THE PLUME, WITH
SIGNIFICANT DECREASES OBSERVED AT ALL AFTERBURNING
POWER LEVELS. CARBON MONOXIDE CAN EITHER INCREASE
OR DECREASE WITH AXIAL DISTANCE IN THE PLUME,
DEPENDING ON THE POWER LEVEL AND THE HYDROCARBON
CONTENTS. NO SIGNIFICANT CHANGE IN TOTAL OXIDES OF
NITROGEN WAS OBSERVED AT ANY POWER LEVEL. A
COMPUTERIZED ANALYTICAL PLUME MODEL WAS DEVELOPED AND
VERIFIED, WHICH CONSIDERS THE SIMULTANEOUS MIXING AND
CHEMICAL REACTION PROCESSES THAT CAN OCCUR IN THE
PLUMES OF AFTERBURNING ENGINES. THE MODEL ENABLES
CALCULATING LOCAL CONCENTRATIONS OF THE VARIOUS
EXHAUST GASES AT ANY AXIAL OR RADIAL LOCATION FROM
INITIAL VALUES MEASURED AT THE EXHAUST PLANE. A
PROCEDURE FOR AFTERBURNING ENGINE EMISSIONS
MEASUREMENTS WAS DEVELOPED. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A019 456 6/20 5/2
CALIFORNIA UNIV IRVINE

TOXIC HAZARDS RESEARCH UNIT ANNUAL
TECHNICAL REPORT: 1975.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 74-MAY 75,
OCT 75 221P MACEWEN, J. D.; VERNOT, E.

H. ;

CONTRACT: F33615-73-C-4059

PROJ: AF-6302

TASK: 630201

MONITOR: AMRL TR-75-57

UNCLASSIFIED REPORT

DESCRIPTORS: *TOXIC HAZARDS, *REPORTS,
OCCUPATIONAL DISEASES, TOXICITY, LIQUID
PROPELLANTS, HYDRAZINE, DIMETHYL HYDRAZINE (1-
1), CHLOROMETHANES, ETHANES, FLUORINE COMPOUNDS,
INHALATION, COAL TAR, AEROSOLS, TOXICOLOGY,
WATER POLLUTION, EXPOSURE(PHYSIOLOGY),
LABORATORY EQUIPMENT, INDUSTRIAL HYGIENE,
INGESTION(PHYSIOLOGY), SKIN(ANATOMY), AIR
POLLUTION, BLOOD ANALYSIS, CHEMICAL ANALYSIS,
INTERACTIONS, LABORATORY TESTS, NEOPLASMS,
LETHAL DOSAGE, CORROSION, CHEMICALS, MAMMALS
IDENTIFIERS: HYDRAZINE(MONOMETHYL), MONOMETHYL
HYDRAZINE, PENTANE/PER FLUORO, PERFLUOROPENTANE,
DICHLOROMETHANE, TRICHLOROETHANES, METHANE/
BIS(2-2-DINITRO-2-FLUORETHOXY), SYFO

(U)

(U)

THE RESEARCH PROGRAMS OF THE TOXIC HAZARDS
RESEARCH UNIT (THRU) FOR THE PERIOD OF JUNE
1974 THROUGH MAY 1975 ARE REVIEWED IN THIS REPORT.
ACUTE TOXICITY EXPERIMENTS WERE CONDUCTED ON
SYFO, FEFO, HYDRAZINE, MMH AND UDMH.
CHRONIC TOXICITY EXPERIMENTS WERE CONDUCTED WITH
MMH IN DRINKING WATER, COAL TAR AEROSOLS, INHALED
UDMH AND WITH A MIXTURE OF DICHLOROMETHANE AND 1,1,
1-TRICHLOROETHANE. ORAL AND PERCUTANEOUS TOXICITY
DETERMINATIONS AND SKIN IRRITATION AND SKIN
SENSITIZATION STUDIES WERE MADE ON A NUMBER OF
TRANSPORTABLE CHEMICAL AGENTS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A019 583 4/1 7/4 14/2
MISSOURI UNIV ROLLA GRADUATE CENTER FOR CLOUD PHYSICS
RESEARCH

AIRCRAFT MEASUREMENTS OF AITKEN NUCLEI IN THE
LOWER STRATOSPHERE.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT.,
APR 75 54P PODZIMEK, JOSEF ; SEDLACEK, W.
A. ; HABERL, J. B. ;
REPT. NO. AG-2
CONTRACT: N00014-75-C-0413, DOT-AS-20023
MONITOR: DOT/TST 75-129

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH LOS
ALAMOS SCIENTIFIC LAB., N. MEX. AND GENERAL
ELECTRIC CO., PITTSFIELD, MASS.

DESCRIPTORS: *STRATOSPHERE, *AEROSOLS, *AIR
POLLUTION, EXHAUST GASES, NEW MEXICO, TEXAS,
MEASUREMENT, AIRBORNE, PARTICLES,
CONCENTRATION (COMPOSITION), NUCLEI, SAMPLING,
MONITORING, CALIBRATION, PARTICLE SIZE, LIGHT
SCATTERING, ELECTROSTATIC PRECIPITATION, CHARGED
PARTICLES, MOUNTAINS

(U)

IDENTIFIERS: *AIRBORNE WASTES, *AIR POLLUTION
SAMPLING, AITKEN NUCLEI

(U)

THE PURPOSE OF THIS ARTICLE IS TO EVALUATE THE
FIRST AN MEASUREMENTS USING THE NEW GE AN
COUNTER IN STRATOSPHERIC CONDITIONS. THE
INSTRUMENT BRIEFLY DESCRIBED IN THIS ARTICLE WAS
FLOWN ON A WB-57F AIRCRAFT IN 1974 UP TO AN
ALTITUDE OF 20 KM. THE VERTICAL PROFILES OF AN
CONCENTRATIONS, MEASURED MAINLY OVER NEW MEXICO
AND TEXAS, SHOWED AN COUNTS COMPARABLE WITH THE
PREVIOUS BALLOON MEASUREMENTS IN THE TROPOPAUSE
(SEVERAL HUNDRED TO 1,000 N/CC). HOWEVER, IN
ALTITUDES ABOVE 13 KM, THE MEASURED AN
CONCENTRATIONS WERE HIGHER BY ONE ORDER OF MAGNITUDE
(30 N/CC) THAN THE OLDER DATA OF JUNGE ET. AL.
(1961). THE FLIGHTS OVER THE ROCKY
MOUNTAINS AND OVER TEXAS INDICATE A POTENTIALLY
STRONG INFLUENCE THAT MOUNTAINOUS AREAS HAVE ON AN
COUNTS IN THE LOWER STRATOSPHERE. THE MEASUREMENTS
ALSO SHOWED THE POLLUTION OF THE LOWER STRATOSPHERE
CAUSED BY AIRCRAFT EMISSIONS IN THE TROPOPAUSE.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A019 783 13/2 21/7
TRANSPORTATION SYSTEMS CENTER CAMBRIDGE MASS

U.S. COAST GUARD POLLUTION ABATEMENT
PROGRAM - TWO-STROKE CYCLE OUTBOARD
ENGINE EMISSIONS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JAN 74-JUN 75,
SEP 75 134P WALTER, R. A. ;
REPT. NO. TSC-USCG-75-4
MONITOR: USCG D-122-75

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR POLLUTION, *EMISSION CONTROL,
*MARINE ENGINES, OUTBOARD, TUNING, FUEL
CONSUMPTION, POLLUTION ABATEMENT, COAST GUARD,
EXHAUST GASES, BOATS, TEST METHODS, COMPUTER
PROGRAMS, INTERNAL COMBUSTION ENGINES
IDENTIFIERS: OUTBOARD ENGINES, DOT/5C

(U)

(U)

THIS REPORT DOCUMENTS THE RESULTS OF EMISSIONS
TESTS PERFORMED ON THREE OLD AND TWO NEW OUTBOARD
ENGINES. TESTS OF THE EMISSIONS WERE MADE BEFORE
AND AFTER WATER CONTACT. OLDER ENGINES WERE TESTED
IN AS-RECEIVED CONDITION, TUNED TO FACTORY
SPECIFICATIONS AND RETESTED. AFTER BEING TUNED,
THESE ENGINES SHOWED IMPROVEMENTS IN EMISSIONS AND
FUEL CONSUMPTION. THE NEW ENGINES WITH IMPROVED
IGNITION AND COMBUSTION CHAMBER DESIGN AND CRANKCASE
DRAINAGE RECYCLING SHOWED LESS EMISSION AND BETTER
FUEL CONSUMPTION CHARACTERISTICS THAN THE OLDER
ENGINES. THE RESULTS OF THESE TESTS WERE USED TO
CALCULATE THE EMISSIONS IMPACT OF THE UNITED
STATES COAST GUARD OUTBOARD FLEET FOR
COMPARISON WITH THE EMISSIONS IMPACT OF OTHER COAST
GUARD VESSELS AND VESSELS IN GENERAL. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A020 032 14/2 7/1
SCIENCE APPLICATIONS INC LA JOLLA CALIF

A PORTABLE GAS-FILTER-CORRELATION
SPECTROMETER FOR HCL AND HF.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 15 JAN 74-31 JAN 75,
OCT 75 41P BARTLE,E. ROY ;
REPT. NO. SAI-75-525-LJ
CONTRACT: F41609-74-C-0014
PROJ: AF-7164
TASK: 716416
MONITOR: SAM TR-75-33

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR POLLUTION, *POLLUTANTS,
*HYDROGEN FLUORIDE, *HYDROGEN CHLORIDE, MONITORS,
GAS DETECTORS, ABSORPTION SPECTRA, EMISSION
SPECTRA, MOBILITY, SENSITIVITY, LABORATORY TESTS,
COMBUSTION PRODUCTS, EXHAUST GASES, PORTABLE
EQUIPMENT
IDENTIFIERS: *GAS FILTER CORRELATION SPECTROMETRY,
*AIR POLLUTION DETECTION, REMOTE SENSING, DESIGN
CRITERIA

(U)

(U)

A PORTABLE GAS-FILTER-CORRELATION SPECTROMETER
(GFCS) HAS BEEN DEVELOPED TO CONTINUOUSLY MONITOR
HCL AND HF OVER THE CONCENTRATION RANGE FROM 0.2
TO 1000 PPM. THE UNIT OPERATES USING EITHER 115
VAC 60 HZ OR 12 VDC. THE ATTAINED THRESHOLD
SENSITIVITIES OF 167 AND 200 PPB FOR HCL AND HF,
RESPECTIVELY, ARE NEARLY THOSE PREDICTED FROM
THEORETICAL CONSIDERATIONS. EXCELLENT SPECIFICITY
IS OBTAINED IN THE PRESENCE OF ANTICIPATED
INTERFERING SPECIES. THE SYSTEM ALSO CAN BE
CONVERTED INTO AN ACTIVE LONG-PATH SYSTEM USING A
RETROREFLECTOR; RANGES UP TO 500 M (1-KM OPTICAL
PATH) CAN BE USED WITH ABOUT THE SAME SENSITIVITIES.
A TECHNIQUE FOR PASSIVE SINGLE-ENDED REMOTE SENSING
IS DESCRIBED THAT APPEARS TO OFFER SIGNIFICANT
POTENTIAL FOR RANGES UP TO 1 KM. THIS MONITOR CAN
BE USED ON AIR POLLUTION DETECTION.

(U)

AD-A041 800

DEFENSE DOCUMENTATION CENTER ALEXANDRIA VA
ENVIRONMENTAL POLLUTION: AIR POLLUTION - EXHAUST GASES.(U)
JUL 77

F/G 13/2

UNCLASSIFIED

DDC/BIB-77/08

NL

3 OF 4
ADA041800



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A020 169 13/2 1/5

FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS
RESEARCH AND DEVELOPMENT SERVICE

AIR QUALITY IMPACT ANALYSIS OF A PROPOSED
NORTH/SOUTH RUNWAY AT ANCHORAGE
INTERNATIONAL AIRPORT.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

DEC 75 95P

TIGUE, JOHN E. ; CARPENTER,

LARRY K. ;

REPT. NO. FAA-RD-75-179

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR QUALITY, *AIR POLLUTION,
MATHEMATICAL PREDICTION, ALASKA, INTERNATIONAL
AIRPORTS, RUNWAYS, GROUND SUPPORT EQUIPMENT, AIR
TRAFFIC, EXHAUST GASES, DISPERSING, PLUMES,
EMISSION SPECTRA, COMPUTERIZED SIMULATION, ADVERSE
CONDITIONS, ENVIRONMENTS, IMPACT, COMMUNITIES,
ATMOSPHERE MODELS, POLLUTANTS, SPATIAL
DISTRIBUTION, FLOW CHARTING,
CONCENTRATION (COMPOSITION)

(U)

IDENTIFIERS: ENVIRONMENTAL IMPACT,
ANCHORAGE (ALASKA), AVAP COMPUTER PROGRAM,
DOT/5C

(U)

THIS REPORT PRESENTS AN AIR QUALITY ANALYSIS OF THE
IMPACT OF A PROPOSED RUNWAY AT ANCHORAGE
INTERNATIONAL AIRPORT. A PROJECTION OF 1978 AIR
TRAFFIC CONDITIONS WAS MADE AND THE AIRPORT
VICINITY AIR POLLUTION (AVAP) MODEL WAS USED
TO CALCULATE THE AIRCRAFT IMPACT UPON AIR QUALITY FOR
CASES WITH AND WITHOUT THE PROPOSED RUNWAY. THE
AVAP MODEL IS A GAUSSIAN-PLUME-TYPE DISPERSION
MODEL THAT UTILIZES POINT, AREA, AND LINE SOURCE
FORMULATIONS TO SIMULATE THE AIRPORT SYSTEM. THE
AIR QUALITY IMPACT IS EVALUATED BY COMPARING THE AIR
QUALITY CONCENTRATIONS FOR THE CASE WITH THE PROPOSED
RUNWAY TO THE CASE WITHOUT THE RUNWAY. TYPICAL
ANCHORAGE DAYS WHERE THE METEOROLOGY IS POOR WERE
SELECTED SUCH THAT RATHER POOR AIR QUALITY WOULD
RESULT. THE STUDY INDICATES THAT THE ADDITION OF
THE PROPOSED RUNWAY DOES NOT MAKE A SIGNIFICANT
IMPACT UPON THE AIRPORT VICINITY AIR QUALITY. AREAS
OF CONCERN DO EXIST ON THE AIRPORT ITSELF, BUT THE
IMPACT ON THE COMMUNITIES SURROUNDING ANCHORAGE
INTERNATIONAL AIRPORT IS MINIMAL. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A020 352 13/2 9/2
ARGONNE NATIONAL LAB ILL ENERGY AND ENVIRONMENTAL SYSTEMS
DIV

AIRPORT VICINITY AIR POLLUTION MODEL USER
GUIDE.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

DEC 75 275P WANG, I. T. ; CONLEY, L. A.

ROTE, D. M. ;

CONTRACT: DOT-FA71WAI-223

MONITOR: FAA-RD 75-230

UNCLASSIFIED REPORT

DESCRIPTORS: *COMPUTERIZED SIMULATION, *AIRPORTS,
*AIR POLLUTION, PARTICULATES, MATHEMATICAL MODELS,
COMPUTATIONS, COMPUTER PROGRAMS, COMPUTER
PROGRAMMING, CONCENTRATION(CHEMISTRY),
METEOROLOGICAL DATA, EXHAUST GASES, AIRCRAFT,
FLOW CHARTING, AIRCRAFT ENGINES, WIND DIRECTION,
WIND VELOCITY, AUTOMOTIVE VEHICLES

(U)

IDENTIFIERS: DOT/5C, ENVIRONMENTAL SURVEYS,
AIRPORT VICINITY AIR POLLUTION MODEL

(U)

THIS REPORT DESCRIBES IN DETAIL THE COMPUTER CODE
OF THE AIRPORT VICINITY AIR POLLUTION
(AVAP) MODEL AND THE VARIABLES REQUIRED TO EXERCISE
THE MODEL. THE AVAP MODEL IS A COMPUTERIZING
COMPREHENSIVE AIRPORT SIMULATION MODEL WHICH CAN
SERVE AS A TOOL IN EVALUATING THE TOTAL AIR QUALITY
IMPACT OF ALL AIRPORT OPERATIONS ON THE AIRPORT
VICINITY. THE REPORT FOCUSSES ON THE OPERATIONAL
PROCEDURES AND DESCRIPTIONS OF THE STRUCTURE AND
FUNCTION OF THE COMPUTER CODE. THE STRUCTURE,
CHAIN OF COMMAND THAT LINKS THE SUBROUTINES, AND THE
MORE IMPORTANT COMPUTATIONAL SUBROUTINES ARE
ILLUSTRATED IN DETAILED FLOW DIAGRAMS. THE BASIC
FORMULAS USED IN THE CALCULATIONS ARE PRESENTED.
ONE SECTION PROVIDES GUIDELINES FOR PREPARATION OF
THE INPUT DATA AND CAN SERVE AS A 'MINI' INSTRUCTION
MANUAL BY ITSELF. PROCEDURES ARE DESCRIBED BY WHICH
THE AIRPORT AND ENVIRON DATA CAN BE COLLECTED AND
CAST INTO THE PROPER FORMS. THE DATA DECK
FORMATING, VARIABLE LIMITS AND OMISSIONS PERMITTED,
AND THE COMPUTER CONFIGURATION REQUIRED TO RUN THE
CODE ARE DISCUSSED. SAMPLES OF INPUT AND OUTPUT
ARE INCLUDED.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A020 587 22/2 21/8
AIR FORCE ROCKET PROPULSION LAB EDWARDS AFB CALIF

THRUSTER CONTAMINATION PREDICTIONS FOR NATO
III SATELLITE.

(U)

DESCRIPTIVE NOTE: FINAL REPT. SEP-DEC 75,
DEC 75 65P DAVIS, LARRY P. WITBRACHT,

I. LEE ;

REPT. NO. AFRPL-TR-75-67

PROJ: AF-5730

TASK: 573009

UNCLASSIFIED REPORT

DESCRIPTORS: *EXHAUST GASES, *CONTROLLABLE THRUST
ROCKET ENGINES, ATTITUDE CONTROL SYSTEMS, SATELLITE
ATTITUDE, HYDRAZINE, THRUSTERS, CONTAMINATION,
SOLAR PANELS, SURFACE PROPERTIES,
PERFORMANCE(ENGINEERING), TEMPERATURE,
COMPUTER APPLICATIONS, SUPERSONIC FLOW, WATER,
ARTIFICIAL SATELLITES, SPACECRAFT COMPONENTS,
PLUMES, MATHEMATICAL ANALYSIS, GRAPHS

(U)

IDENTIFIERS: NATO 3 SATELLITE, SATELLITE CONTROL
SYSTEMS, AIR POLLUTION EFFECTS(MATERIALS),
CONTAM COMPUTER CODE

(U)

POTENTIAL CONTAMINATION OF THE NATO III SATELLITE
SURFACES BY THE EFFLUX FROM ITS HYDRAZINE THRUSTERS
HAS BEEN STUDIED. THE CONTAM COMPUTER CODE,
COUPLED WITH EMPIRICAL DATA FOR ESTIMATION OF MASS
FLUX IN THE PLUME BACKFLOW REGIONS AND FOR
CALCULATION OF VAPORIZATION RATES FROM THE SPACECRAFT
SURFACES, WAS USED FOR THE ANALYSIS. TWO TYPES OF
THRUSTER OPERATIONS, SHORT PULSE TRAINS FOR ATTITUDE
MANEUVERS AND LONG PULSE TRAINS FOR ALTITUDE
MANEUVERS, WERE CONSIDERED. THE RESULTS SHOW THAT
ONLY SMALL NET DEPOSITS OF WATER AND HYDRAZINE ARE TO
BE EXPECTED ON A SMALL PERCENTAGE OF THE TOTAL
SPACECRAFT SOLAR PANEL AREA AT TEMPERATURES OF -
72F. IN ADDITION, THESE DEPOSITS WILL HAVE A
VERY SHORT RESIDENCE TIME ON THESE SURFACES.
LIMITATIONS IN THE ANALYSIS ARE PRESENTED AND THEIR
IMPACT ON THE CONCLUSIONS ARE DISCUSSED.

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A021 082 13/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

LET MOSCOW BE A MODEL CITY: THE FIFTH
OCEAN,

(U)

FEB 76 11P LEBEDYUK, G. ;
REPT. NO. FTD-ID(RS)I-0110-76

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED TRANS. OF MOSKOVSKAYA
PRAVDA (USSR) N153 (16880) P2 COL 1-6, 2 JUL 75,
BY GALE M. WEISENBARGER.

DESCRIPTORS: *AIR QUALITY, *POLLUTION ABATEMENT,
URBAN AREAS, USSR, AIR POLLUTION CONTROL
EQUIPMENT, EXHAUST GASES, PURIFICATION,
TRANSLATIONS

(U)

LET MOSCOW BE A MODEL CITY: THE FIFTH
OCEAN--TRANSLATION.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A021 948 14/2 7/1 7/4 21/4
EDGEWOOD ARSENAL ABERDEEN PROVING GROUND MD

PROCEEDINGS OF THE ANNUAL SYMPOSIUM 'TRACE ANALYSIS AND DETECTION IN THE ENVIRONMENT' (6TH) HELD AT EDGEWOOD ARSENAL ON 29 APRIL-1 MAY 1975 AND SPONSORED BY THE AMERICAN DEFENSE PREPAREDNESS ASSOCIATION.

(U)

DESCRIPTIVE NOTE: SPECIAL PUB.,
JAN 76 318P BROWN, JOHN A. ;
REPT. NO. EO-SP-76001

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPORT DATED JAN 75, AD-A007 799.

DESCRIPTORS: *CHEMICAL ANALYSIS, *GAS ANALYSIS, *MEETINGS, *TRACE GASES, *TRACE ELEMENTS, *SAMPLING, CONCENTRATION(CHEMISTRY), AIR POLLUTION, CRYOGENICS, CALIFORNIA, SMOG, LABORATORY EQUIPMENT, COMBUSTION PRODUCTS, PARTICLES, INFRARED SPECTROSCOPY, ABSORPTION SPECTRA, ATMOSPHERIC CHEMISTRY, FIELD TESTS, GAS CHROMATOGRAPHY, RAMAN SPECTROSCOPY, VINYL PLASTICS, CHEMILUMINESCENCE, WATER POLLUTION, MICROSCOPY, NARCOTICS, MARIJUANA, MONITORING, OPIUM ALKALOIDS, PLASMAS(PHYSICS), EXPLOSIVES, EFFLUENTS, FLY ASH, CHEMICAL AGENT DETECTORS, PLUMES, INDUSTRIAL HYGIENE, LIQUID CRYSTALS, EMISSION SPECTRA, POLAROGRAPHY, DYES, PHOTOELECTRIC EFFECT, MERCURY

(U)

IDENTIFIERS: AIR POLLUTION DETECTION, AIR POLLUTION SAMPLING, LASER SPECTROSCOPY, JP-4 FUELS, GLASS SAMPLING METHOD, GLASS FILTERS, VINYL CHLORIDE, WATER POLLUTION SAMPLING, CONTINUOUS AQUEOUS MONITORS, EXHAUST EMISSIONS, ISOTOPIC LABELING

(U)

PAPERS ON CONCENTRATION, DETECTION AND SAMPLING OF TRACE GASES IN THE AIR WERE GIVEN. TECHNIQUES USING CRYOGENIC SAMPLING, INFRARED SPECTROSCOPY, ISOTOPE-ZEEMAN ATOMIC ABSORPTION MERCURY DETECTOR, MULTIPASS RAMAN INSTRUMENT, ULTRAMICROSCOPY, PLASMA CHROMATOGRAPHY, ULTRASENSITIVE FLAME PHOTOMETER, DATA-A PATTERN RECOGNITION, ISOTOPE DILUTION ENZYMATIC SYSTEMS, CHEMICAL AGENT DECISION TECHNOLOGY, LIQUID CRYSTAL TECHNOLOGY, MICROWAVE, EMISSION SPECTROSCOPY, POLAROGRAPHY AND OTHER METHODS ARE DESCRIBED.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A022 353 7/4
AERONUTRONIC FORD CORP NEWPORT BEACH CALIF AERONUTRONIC
DIV

MONITORING NO AND CO IN AIRCRAFT JET
EXHAUST BY A GAS-FILTER CORRELATION
TECHNIQUE.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 3 MAR 75-14 JAN 76,
JAN 76 70P GRYVNAK, DAVID A. BURCH,

DARRELL E. ;
REPT. NO. U-6179
CONTRACT: F33615-75-C-2038
MONITOR: AFAPL TR-75-101

UNCLASSIFIED REPORT

DESCRIPTORS: *EXHAUST GASES, *GAS TURBINES,
*CARBON MONOXIDE, *GAS ANALYSIS, *INFRARED
SPECTROSCOPY, JET ENGINES, MONITORING, INFRARED
SPECTRA, GAS DETECTORS, INFRARED SPECTROPHOTOMETERS,
AIRCRAFT ENGINES

(U)

IDENTIFIERS: *AIRCRAFT EXHAUST, T-56 ENGINES,
*NITROGEN OXIDE(NO), CORRELATION SPECTROSCOPY,
SPECTROSCOPIC ANALYSIS

(U)

THE EXHAUST FROM JET ENGINES CONTAINS MANY
POLLUTANT GAS SPECIES. AT THE PRESENT TIME A
CONVENIENT, RELIABLE METHOD IS NEEDED TO MONITOR
THEIR CONCENTRATIONS. THERE ARE MANY DIFFERENT
METHODS AVAILABLE FOR DETERMINING CONCENTRATIONS OF
POLLUTANT GASES IN THE EFFLUENT FROM SMOKESTACKS,
AIRCRAFT, AUTOMOBILES AND OTHER POLLUTIONS SOURCES.
EACH METHOD HAS ITS MERITS AND ITS DIFFICULTIES
DEPENDING ON THE APPLICATION. A CLASS OF
INSTRUMENTS EMPLOYING GAS-CELL CORRELATION
SPECTROSCOPY TO PROVIDE GOOD SENSITIVITY AND
SPECIFICITY AT RELATIVELY LOW COST HAS BEEN DEVELOPED
FOR A VARIETY OF APPLICATIONS. AN INFRARED
INSTRUMENT USING A GAS-FILTER CORRELATION TECHNIQUE
WAS USED TO IN-SITU MONITOR NO AND CO IN THE
EXHAUST PLUME OF A T56 JET ENGINE COMBUSTOR. THE
INSTRUMENT, BUILT PREVIOUSLY BY AERONUTRONIC FORD
FOR EPA TO MONITOR POLLUTANT GASES IN SMOKESTACK
EXHAUSTS, WAS MODIFIED FOR USE ON THE COMBUSTOR.
TEMPERATURES AND CONCENTRATIONS RANGED FROM 300 TO
930K AND UP TO 130 PPM FOR NO; FOR CO FROM 300
TO 550K AND UP TO 220 PPM. OPTICAL RESULTS WERE
OBTAINED SIMULTANEOUSLY BY WITHDRAWING THE SAMPLE
USING PROBE TECHNIQUES AND ANALYZING THE GAS WITH A
CONVENTIONAL GAS ANALYZER.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A022 671 13/2 21/9.2 21/8.2
NAVAL WEAPONS CENTER CHINA LAKE CALIF

ENVIRONMENTAL STUDY OF TOXIC EXHAUSTS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. FEB 73-SEP 74,
FEB 76 104P NADLER, MELVIN P. ;

PROJ: AF-5730

TASK: 573073

MONITOR: AFRPL

TR-76-13

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR POLLUTION, *SOLID PROPELLANT
ROCKET ENGINES, *ROCKET EXHAUST, ROCKET LAUNCHING,
ADSORPTION, CARBON MONOXIDE, AFTERBURNERS,
HYDROGEN CHLORIDE, ALUMINUM COMPOUNDS, ISOTHERMS,
CHEMICAL AGENT DETECTORS, EXHAUST PLUMES, NITROGEN
OXIDES, AEROSOLS, METEOROLOGICAL DATA, WASTE
MANAGEMENT, OXIDES, CONCENTRATION(CHEMISTRY),
LAUNCH VEHICLES, ROCKET EXHAUST
IDENTIFIERS: TITAN

(U)

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SOME ASPECTS OF THE ENVIRONMENTAL HAZARD OF LARGE
SOLID ROCKET MOTORS HAVE BEEN INVESTIGATED.
ADSORPTION EXPERIMENTS OF HCL(G) AND
CO(G) ONTO AL2O3 WERE PERFORMED. THE
AFTERBURNING OF CO TO CO2 WAS FOUND TO BE 99%
COMPLETE. THE GROUND CLOUD PRODUCED DURING A
TITAN LAUNCH WOULD CONTAIN 9 PPM CO INITIALLY AND
50-82 PPM CO IF THE TOTAL BURN OCCURRED ON THE PAD.
HYDROGEN CHLORIDE AND NITRIC OXIDE MEASUREMENTS
WERE MADE IN THE GROUND CLOUDS PRODUCED FROM SMALL
SOLID ROCKET MOTORS. EXPERIMENTS INDICATED THAT
LOWER THAN THERMODYNAMICALLY PREDICTED NO
CONCENTRATIONS EXIST IN THE GROUND CLOUD. THE HCL
DOSAGES MEASURED SHOW THE HCL IN THE INITIAL GROUND
CLOUD TO BE APPROXIMATELY THAT PREDICTED
THERMODYNAMICALLY. THE INITIAL GROUND CLOUD IS NON-
HOMOGENEOUS IN HCL AND NO, AND HCL(G) WAS
FOUND OUTSIDE THE VISIBLE CLOUD. EXPERIMENTS WERE
ALSO PERFORMED COMPARING FIVE DIFFERENT HCL
DETECTORS UNDER FIELD CONDITIONS. THE INSTRUMENT
COMPARISON SHOWED THAT LITTLE HCL AEROSOL EXISTS IN
THE TURBULENT GROUND CLOUD FOR RELATIVE HUMIDITIES
LESS THAN 30%. ALSO, THE HCL TIED TO PARTICLES
IS MUCH HIGHER THAN WHAT WOULD BE PREDICTED FROM
LABORATORY EXPERIMENTS.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A022 846 13/2 21/9.2
SPACE AND MISSILE TEST CENTER VANDENBERG AFB CALIF

PH MONITOR OF AIR POLLUTANTS, RESEARCH AND
DEVELOPMENT OF A NEW PH RECORDING METHOD
AND INSTRUMENTS FOR THE RECORDING OF ACID AND/
OR BASIC COMPONENTS RESULTING FROM LAUNCHES
OF ROCKETS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. SEP 72-MAR 75,
MAY 75 88P HENDEL, FRANK J. ;
REPT. NO. SAMTEC-TR-75-190

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR POLLUTION, *PH METERS, *ROCKET
EXHAUST, MONITORS, SOLID ROCKET PROPELLANTS,
ELECTRODES, CONCENTRATION(CHEMISTRY), PH
FACTOR, PROTOTYPES, CALIBRATION, TEST METHODS,
RECORDING SYSTEMS, SOLID FUELS, ROCKET LAUNCHING

(U)

VARIOUS METHODS AND INSTRUMENTS WERE INVESTIGATED
FOR USE IN MONITORING ACIDITY AND ALKALINITY OF
EFFLUENTS RESULTING FROM LAUNCHES OF LARGE ROCKETS,
ESPECIALLY THOSE USING SOLID ROCKET MOTORS. AN
INEXPENSIVE, PORTABLE, BATTERY-OPERATED PH RECORDER
WAS MODIFIED TO MONITOR EFFLUENT OR SPILLED
POLLUTANTS DURING NORMAL OR CATASTROPHIC LAUNCHES OF
LARGE ROCKETS. TWO PROTOTYPE PH MONITORS WERE
CONSTRUCTED AND USED DURING FIRINGS OF 15 SOLID
ROCKET MOTORS. THE DATA FROM ALL RECORDINGS WERE
REDUCED TO READ THE FLUCTUATIONS OF CONCENTRATIONS
AND DOSE (EXPOSURE) IN THE AIR AT VARIOUS
DISTANCES FROM THE FIRINGS. ALL RECORDINGS WERE
PERFORMED ON STRIP CHARTS. TAPE RECORDING WAS ALSO
TESTED; IT IS CHEAPER AND LENDS ITSELF FOR FUTURE
COMPUTERIZED AUTOMATION.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A023 085 21/9.2 6/10 13/2
JOHNS HOPKINS UNIV LAUREL MD CHEMICAL PROPULSION
INFORMATION AGENCY

HYDROGEN CHLORIDE DETECTION, MEASUREMENT AND
MONITORING,

(U)

DEC 75 42P GAARDER, D. S. ; JENSEN, A.
V. ;
REPT. NO. CPIA-PUB-272
CONTRACT: N00017-72-C-4401

UNCLASSIFIED REPORT

AVAILABILITY: PAPER COPY AVAILABLE FROM CHEMICAL
PROPULSION INFORMATION AGENCY, LAUREL, MD.
20810.

DESCRIPTORS: *SOLID ROCKET OXIDIZERS, *OCCUPATIONAL
DISEASES, *HYDROGEN CHLORIDE, COMBUSTION,
MONITORING, AIR POLLUTION, MEASUREMENT, AMMONIUM
PERCHLORATE, TOXICITY, ENVIRONMENTS, TEST METHODS,
STANDARDS, ROCKET LAUNCHING, CHEMICAL INDICATORS,
CHEMICAL AGENT DETECTORS, TOXIC HAZARDS, SOLID
ROCKET PROPELLANTS, COMBUSTION CHAMBER GASES
IDENTIFIERS: *AIR POLLUTION DETECTION, *AIR
POLLUTION SAMPLING

(U)

(U)

RESULTS ARE PRESENTED OF A COMPREHENSIVE SURVEY OF
METHODS FOR DETECTING, MEASURING AND MONITORING
HYDROGEN CHLORIDE RESULTING FROM COMBUSTION OF
PROPELLANTS CONTAINING AMMONIUM PERCHLORATE.
TECHNIQUES FOR SAMPLING AND ANALYSES, COMMERCIALY
AVAILABLE INSTRUMENTS, AND INSTRUMENT TECHNIQUES
UNDER DEVELOPMENT ARE DESCRIBED. THE SURVEY IS
INTENDED TO PROVIDE INFORMATION WHICH WILL ALLOW
SELECTION OF THE OPTIMUM MEASUREMENT TECHNIQUE FOR A
GIVEN APPLICATION. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A023 194 18/4
HARRY DIAMOND LABS ADELPHI MD

ANALYSIS OF THE GAS-STACK MONITOR
CALIBRATION DATA FOR THE DIAMOND ORDNANCE
RADIATION FACILITY. (U)

DESCRIPTIVE NOTE: TECHNICAL MEMO.,
OCT 75 17P WRIGHT, THOMAS P. ;
REPT. NO. HDL-TM-75-19
PROJ: HDL-290E28

UNCLASSIFIED REPORT

DESCRIPTORS: *RADIATION MONITORS, *RADIOACTIVE
WASTES, *CALIBRATION, MONITORING, EXHAUST GASES,
RADIOACTIVE WASTES, ARGON, DATA PROCESSING,
RADIATION HAZARDS, RADIOLOGICAL LABORATORIES,
RADIOACTIVE ISOTOPES, COMPUTER PROGRAMS (U)
IDENTIFIERS: SOFTWARE, *AIR POLLUTION DETECTION,
AIR POLLUTION SAMPLING (U)

IN ORDER TO EFFECTIVELY MONITOR THE RELEASE OF
RADIOACTIVE ARGON-41 GAS FROM THE DORF SITE, IT IS
NECESSARY TO PERIODICALLY CALIBRATE THE MONITORING
EQUIPMENT. THIS REPORT REVIEWS THE ANALYSIS OF THE
CALIBRATION CASE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A023 662 13/2

WISCONSIN UNIV MADISON DEPT OF STATISTICS

COMPARISON OF FORECASTS AND ACTUALITY.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,

MAY 75 23P BOX, G. E. P. ;TIAO, G.

C. I

REPT. NO. UWIS-DS-75-402

CONTRACT: DA-ARO-D-31-124-72-G162

UNCLASSIFIED REPORT

DESCRIPTORS: *TIME SERIES ANALYSIS, *OZONE, *AIR
POLLUTION, FORECASTING, TRANSFER FUNCTIONS,
COMPUTATIONS, MATHEMATICAL MODELS,
CONCENTRATION (COMPOSITION), AUTOMOTIVE VEHICLES,
EXHAUST GASES

(U)

IDENTIFIERS: AZUSA (CALIFORNIA), *ATMOSPHERIC
COMPOSITION

(U)

IN THE ANALYSIS OF TIME SERIES DATA, IT IS
FREQUENTLY OF INTEREST TO COMPARE A SET OF FORECASTS
MADE AT SOME TIME POINT WHEN A CHANGE IN LEVEL IS
SUSPECTED TO HAVE TAKEN PLACE WITH ACTUAL
OBSERVATIONS. THIS PAPER DISCUSSES VARIOUS
STATISTICAL TECHNIQUES FOR MAKING SUCH COMPARISONS,
AND ILLUSTRATES THESE TECHNIQUES IN TERMS OF AN
ACTUAL EXAMPLE CONCERNING THE MONTHLY AVERAGES OF
ATMOSPHERIC OZONE CONCENTRATION OF AZUSA,
CALIFORNIA. THIS PARTICULAR COMPARISON IS OF
INTEREST BECAUSE NEW AUTOMOBILE EMISSIONS STANDARDS
THAT WERE INTRODUCED AT THE END OF 1970. THESE
MEASURES MIGHT HAVE REDUCED OZONE BELOW LEVELS
EXPECTED IF NO NEW STANDARDS HAD BEEN INTRODUCED. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A026 546 21/4 21/5 13/2
AIR FORCE AERO PROPULSION LAB WRIGHT-PATTERSON AFB
OHIO

THE IMPACT OF JP-4/JP-8 CONVERSION ON
AIRCRAFT ENGINE EXHAUST EMISSIONS.

(U)

DESCRIPTIVE NOTE: INTERIM TECHNICAL REPT. JUL 75-FEB
76,

MAY 76 52P BLAZOWSKI, WILLIAM S. ;
REPT. NO. AFAPL-TR-76-20
PROJ: AF-3048
TASK: 304805

UNCLASSIFIED REPORT

DESCRIPTORS: *JET ENGINE FUELS, *EXHAUST GASES,
*TURBOJET ENGINES, *EMISSION, AIR POLLUTION,
CONVERSION, COMBUSTORS, HYDROCARBONS, NITROGEN
OXIDES, CARBON MONOXIDE, SMOKE, PARTICULATES,
COMBUSTION

(U)

IDENTIFIERS: J-85 ENGINES, J-85-GE-5 ENGINES,
JP-4 FUEL, JP-8 FUEL

(U)

THE PROPOSED CONVERSION OF PREDOMINANT AIR
FORCE FUEL USAGE FROM JP-4 TO JP-8 HAS CREATED
THE NEED TO EXAMINE THE DEPENDENCE OF ENGINE
POLLUTANT EMISSION ON FUEL TYPE. AVAILABLE DATA
CONCERNING THE EFFECT OF FUEL TYPE ON EMISSIONS HAS
BEEN REVIEWED. T56 SINGLE COMBUSTOR TESTING HAS
BEEN UNDERTAKEN TO DETERMINE JP-4/JP-8 EMISSION
VARIATIONS OVER A WIDE RANGE OF SIMULATED ENGINE
CYCLE OPERATING CONDITIONS AT IDLE. IN ADDITION,
A J85-5 ENGINE WAS TESTED USING JP-4 AND JP-8.
RESULTS OF THE PREVIOUS AND NEW DATA COLLECTIVELY
LED TO THE FOLLOWING CONCLUSIONS REGARDING CONVERSION
TO JP-8: (A) HC AND CO EMISSION CHANGES
WILL DEPEND UPON INDIVIDUAL COMBUSTOR DESIGN
FEATURES, (B) NO CHANGE TO NOX EMISSION WILL
OCCUR, AND (C) AN INCREASE IN SMOKE/PARTICULATE
EMISSIONS WILL RESULT. IT IS RECOMMENDED THAT
THESE FINDINGS BE INCORPORATED INTO AIR QUALITY
ANALYTICAL MODELS TO DEFINE THE OVERALL IMPACT OF THE
PROPOSAL CONVERSION. FURTHER, IT IS RECOMMENDED
THAT COMBUSTOR ANALYTICAL MODELS BE EMPLOYED TO
ATTEMPT PREDICTION OF THE RESULTS DESCRIBED HEREIN.
SHOULD THESE MODELS BE SUCCESSFUL, ANALYTICAL
PREDICTION OF JP-8 EMISSIONS FROM OTHER AIR
FORCE ENGINE MODELS MAY BE SUBSTITUTED FOR MORE
COMBUSTOR RIG OR ENGINE TESTING. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A026 837 6/6 13/2
CALIFORNIA UNIV IRVINE

ENVIRONMENTAL QUALITY RESEARCH. THE
PHYTOTOXICITY OF MISSILE EXHAUST PRODUCTS:
SHORT TERM EXPOSURES OF PLANTS TO HCL, HF
AND AL(2)O3.

(U)

DESCRIPTIVE NOTE: ANNUAL REPT. NO. 2, 16 JUN 74-31 MAY
75,

MAY 76 53P LERMAN, SHIMSHON ;
CONTRACT: F33615-73-C-4059
PROJ: AF-6302
TASK: 630204
MONITOR: AMRL TR-75-102

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPORT DATED FEB 75, AD-
A011 558.

DESCRIPTORS: *HYDROGEN CHLORIDE, *HYDROGEN FLUORIDE,
*ALUMINA, *PLANTS(BOTANY), *EXHAUST GASES,
AIR POLLUTION, PARTICULATES, GASES, PLANT
GROWTH, PLANT TISSUE, TOXICITY, EXPERIMENTAL
DATA

(U)

IDENTIFIERS: ENVIRONMENTAL QUALITY, *AIR POLLUTION
EFFECTS(PLANTS), BIOINDICATORS, MISSILES

(U)

EIGHT SPECIES OF ORNAMENTALS AND THREE GARDEN
PLANTS WERE SELECTED IN ORDER TO DETERMINE THE RANGE
OF PHYTOTOXIC RESPONSES TO HYDROGEN CHLORIDE,
HYDROGEN FLUORIDE AND ALUMINA PARTICLES. THE
EXPERIMENTAL PLANTS WERE GROWN IN A GREENHOUSE OR
GROWTH CHAMBERS OR GROWTH CHAMBERS UNDER CONTROLLED
CONDITIONS. TWO EXPOSURE CHAMBERS WERE CONSTRUCTED
TO ACCOMMODATE THE EXPOSURE OF PLANTS TO BOTH GASEOUS
AND PARTICULATE POLLUTANTS. METHODS AND EQUIPMENT
FOR THE GENERATION, DISPENSING AND MONITORING OF
POLLUTANTS WERE ESTABLISHED. PLANTS OF VARIOUS AGE
LEVELS FROM EACH SPECIES WERE EXPOSED TO THE MISSILE
PRODUCTS AT VARIOUS CONCENTRATIONS FOR PERIODS OF 10
OR 20 MINUTES EACH. PLANTS RECEIVED A SINGLE
EXPOSURE FOR PHYTOTOXIC RANGE-FINDING STUDIES AS WELL
AS MULTIPLE EXPOSURE TO DETERMINE CUMULATIVE EFFECTS
OF TOXICANTS. GROWTH CONDITIONS SUCH AS
TEMPERATURE, RELATIVE HUMIDITY AND LIGHT INTENSITY
WHICH COULD AFFECT PLANT RESPONSES WERE ALSO UNDER
INVESTIGATION. THE EXPOSED PLANTS WERE EVALUATED
24 TO 48 HOURS AFTER EXPOSURE AND INJURY SYMPTOMS
WERE RECORDED.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A029 176 13/2 13/6 15/5
VALUE ENGINEERING CO OXNARD CALIF

ENVIRONMENTAL PROTECTION GUIDE,

(U)

AUG 75 254P DEZARALA, W. H. ; CRADER, C. L. ; LEVASSEUR, C. J. ;
REPT. NO. ED-6153
CONTRACT: N62578-74-C-0034

UNCLASSIFIED REPORT

DESCRIPTORS: *ENVIRONMENTAL PROTECTION, *GUIDES,
*NAVAL PROCUREMENT, *POLLUTION ABATEMENT,
*MILITARY VEHICLES, *AIR POLLUTION CONTROL
EQUIPMENT, *AIR POLLUTION, NAVAL EQUIPMENT,
SPECIFICATIONS, PASSENGER VEHICLES, TRUCKS,
EARTH HANDLING EQUIPMENT, TRACTORS, TRAILERS,
ROLLERS, COMPACTORS, HEAVY DUTY, VEHICLES,
STANDARDS, NOISE POLLUTION, INTERNAL COMBUSTION
ENGINES, EMISSION CONTROL, HYDROCARBONS, CARBON
MONOXIDE, NITROGEN OXIDES, CRANKCASES,
EVAPORATION, SMOKE, EXHAUST GASES,
TABLES(DATA), INDUSTRIAL EQUIPMENT,
MOTORCYCLES

(U)

THIS ENVIRONMENTAL PROTECTION GUIDE WAS
PREPARED UNDER CONTRACT N62578-74-C-0034
ISSUED BY THE NAVAL FACILITIES ENGINEERING
COMMAND, DAVISVILLE, RHODE ISLAND AND
SUMMARIZES ALL PERTINENT INFORMATION IN A READILY
ACCESSIBLE FORMAT. IT IS INTENDED FOR THE USE OF
NAVY PERSONNEL INVOLVED OR CONCERNED WITH THE
PREPARATION AND/OR UPDATING OF MILITARY OR
FEDERAL SPECIFICATIONS UTILIZED FOR PROCUREMENT OF
INDUSTRIAL EQUIPMENTS CAPABLE OF EMITTING SPECIFIED
POLLUTANTS OR EXCEEDING ESTABLISHED NOISE-LEVEL
CRITERIA. THIS DOCUMENT IS EXPECTED TO SERVE AS THE
PRIMARY CONSOLIDATED DATA SOURCE FOR ALL AVAILABLE
INFORMATION RELATING TO EXISTING AND ANTICIPATED
EMISSIONS CONTROL STANDARDS AND GOALS AT BOTH THE
STATE AND FEDERAL LEVELS; FOR THE MANUFACTURING
SOURCES AND ASSOCIATED CONFIGURATIONS OF THE PRIME
EQUIPMENTS AVAILABLE TO SATISFY EXPECTED FUTURE
NAVY PROCUREMENT NEEDS, AND WHICH MUST INCORPORATE
ADEQUATE PROTECTIVE DESIGN FEATURES OR DEVICES TO
MEET ESTABLISHED POLLUTION CONTROL REQUIREMENTS; AND
FOR THE TYPES, SOURCES, AND CAPABILITIES OF THE
COMMERCIALLY AVAILABLE POLLUTION CONTROL DEVICES/
EQUIPMENTS WHICH MAY BE DESIGNATED, AS APPROPRIATED,
IN NAVY PROCUREMENT ACTIONS.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A029 369 21/7
HARRY DIAMOND LABS ADELPHI MD

SELECTIVE ANALYSIS FOR CARBON MONOXIDE,
HYDROCARBONS, AND NITRIC OXIDE IN A STREAM OF
INTERNAL COMBUSTION ENGINE EXHAUST GASES:
A LITERATURE SURVEY. (U)

DESCRIPTIVE NOTE: TECHNICAL MEMO.,
AUG 76 25P SHEFFER, PETER C. ; BOYD, J.
MICHAEL ;
REPT. NO. HDL-TM-76-15
PROJ: DA-1-T-161101-A-91-A

UNCLASSIFIED REPORT

DESCRIPTORS: *INTERNAL COMBUSTION ENGINES,
LITERATURE SURVEYS, OXIDATION, NITROGEN OXIDES,
DIESEL ENGINES, CARBON MONOXIDE, HYDROCARBONS,
AUTOMOBILE EXHAUST, EXHAUST GASES (U)
IDENTIFIERS: *EXHAUST ANALYZER (U)

THIS PAPER REPORTS A LITERATURE SURVEY ON THE
METHODS OF SELECTIVE ANALYSIS FOR THE EXHAUST GASES
INCLUDING CARBON MONOXIDE, HYDROCARBONS, AND NITRIC
OXIDE. PARTICULAR INTEREST IS PAID TO THOSE METHODS
THAT HAVE THE POTENTIAL TO BE ADAPTED TO THE DESIGN
OF A PROCESSOR FOR THE ANALYZER. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A030 005 14/2 21/5 7/4
ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE
STATION TENN

COMPARISON OF UV ABSORPTION MEASUREMENTS WITH
PROBE-SAMPLING MEASUREMENTS OF NITRIC OXIDE
CONCENTRATION IN A JET ENGINE COMBUSTOR
EXHAUST.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 1 APR-1 JUL 75,
SEP 76 33P FEW, J. D. ; MCGREGOR, W.
K. ; GLASSMAN, H. N. ;
REPT. NO. AEDC-TR-76-134
PROJ: ARO-R32P-A6A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH AEDC,
INC., TULLAHOMA, TENN., REPT. NO. ARO-ETF-TR-
76-77.

DESCRIPTORS: *EXHAUST GASES, *NITROGEN OXIDES,
*ULTRAVIOLET SPECTROSCOPY, *ABSORPTION SPECTRA,
*JET ENGINES, AIR POLLUTION, RESONANCE ABSORPTION,
BAND SPECTRA, COMBUSTORS, TURBOPROP ENGINES,
CONCENTRATION(CHEMISTRY), EMISSION, PRESSURE,
TEMPERATURE, GAS ANALYSIS, PROBES,
COMPARISON

(U)

IDENTIFIERS: *NITRIC OXIDE

(U)

MEASUREMENTS WERE MADE IN THE EXHAUST OF A T-56
TURBINE ENGINE COMBUSTOR OF NITRIC OXIDE (NO)
CONCENTRATION USING AN ULTRAVIOLET (UV) SPECTRAL
ABSORPTION TECHNIQUE. THE MEASUREMENTS WERE MADE AT
TWO AXIAL LOCATIONS IN THE COMBUSTOR EXHAUST STREAM.
THE NO GAMMA-BAND RADIATION AT 2265 A PRODUCED
IN A RESONANCE SOURCE WAS PASSED THROUGH THE EXHAUST
STREAM, AND THE AMOUNT TRANSMITTED WAS RECORDED.
THE MATHEMATICAL MODEL USED TO DETERMINE THE NO
CONCENTRATION FROM THE ABSORPTION MEASUREMENTS IS
DESCRIBED. PRESSURE AND TEMPERATURE BROADENING
EFFECTS ON THE MEASURED ABSORPTION ARE CONSIDERED IN
THE LINE-BY-LINE TRANSMISSION CALCULATION. THE
LINE-OF-SIGHT ABSORPTION MEASUREMENTS THROUGH THE
AXISYMMETRIC EXHAUST STREAM WERE CONVERTED TO LOCAL
CONCENTRATION VALUES VIA AN ITERATIVE RADIAL
INVERSION COMPUTATION. THESE IN SITU MEASUREMENTS
ARE COMPARED TO NO CONCENTRATION VALUES OBTAINED BY
CONVENTIONAL PROBE-SAMPLING TECHNIQUES USING A
CHEMILUMINESCENT ANALYZER. THE IN SITU MEASUREMENTS
OF THE NO CONCENTRATION WERE LARGER THAN THE PROBE-
SAMPLED MEASUREMENTS BY FROM 50 TO 80 PERCENT,

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A030 100 13/2 21/5
UNITED ENGINEERS AND CONSTRUCTORS INC BOSTON MASS

TEST AND EVALUATION OF A PILOT TWO-STAGE
PRECIPITATOR FOR JET ENGINE TEST CELL
EXHAUST GAS CLEANING.

(U)

APR 76 117P
CONTRACT: N6267-74-C-0161, N00025-72-C-0037

UNCLASSIFIED REPORT

DESCRIPTORS: *EMISSION, *JET ENGINES, *TEST
FACILITIES, *POLLUTION ABATEMENT, *ELECTROSTATIC
PRECIPITATION, EXHAUST GASES, TEST EQUIPMENT,
CELLS, NAVAL AIRCRAFT, PROTOTYPES,
PERFORMANCE(ENGINEERING), COSTS, COST
ESTIMATES

(U)

IDENTIFIERS: *TWO STAGE ELECTROSTATIC
PRECIPITATORS

(U)

FINDINGS OF A STUDY FOR THE ABATEMENT OF AIR
POLLUTION CAUSED BY OPERATION OF NAVAL JET ENGINE
TEST FACILITIES, ISSUED IN AUGUST 1973, WERE THAT
THE USE OF FUEL ADDITIVES, THE RETROFIT OF SMOKELESS
COMBUSTORS AND THE INSTALLATION OF GAS CLEANING
EQUIPMENT WERE POTENTIAL MEANS OF CONTROLLING
PARTICULATE EMISSIONS FROM THE CELLS. ADDITIVES AND
SMOKELESS COMBUSTORS WERE FOUND TO REQUIRE ADDITIONAL
DEVELOPMENT LEAVING EXHAUST GAS CLEANING AS THE ONLY
TECHNOLOGY THEN AVAILABLE FOR EMISSION CONTROL. A
TWO-STAGE ELECTROSTATIC PRECIPITATOR WAS RECOMMENDED
AS THE MOST VIABLE ALTERNATIVE TO A CONCEPT THEN
BEING ACTIVELY DEVELOPED, THE CROSS-FLOW WET
SCRUBBER. DUE TO THE UNIQUE NATURE OF THE
APPLICATION AND THE HIGH COST OF FULL-SIZED
EQUIPMENT, IT WAS RECOMMENDED THAT A BENCH SCALE
PRECIPITATOR BE TESTED TO CONFIRM PERFORMANCE AND
ESTABLISH SIZE PARAMETERS. SUCH A PROTOTYPE UNIT
WAS SUBSEQUENTLY INSTALLED AT BLACK POINT TEST
CELL NO. 1, NAVAL AIR REWORK FACILITY,
JACKSONVILLE, FLORIDA AND UNDERWENT A SEQUENCE OF
PERFORMANCE AND OPERATING TESTS UNDER THE SUPERVISION
OF UE AND C. THIS REPORT SUMMARIZES THE RESULTS
OF THE TEST PROGRAM AND PROVIDES DATA ON THE
ECONOMICS OF APPLYING A FULL-SCALE SYSTEM TO A JET
ENGINE TEST CELL.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A030 373 15/2
TRACOR INC AUSTIN TEX

DEVELOPMENT OF AN AUTOMATED MUSTARD STACK
MONITOR. PHASE II.

(U)

DESCRIPTIVE NOTE: FINAL REPT. DEC 75-JUN 76,
JUN 76 29P EHRlich, BURNEY J. ; SPENCER,

SAMUEL F. ;

CONTRACT: DAAA15-75-C-0070

MONITOR: EC CR-76084

UNCLASSIFIED REPORT

DESCRIPTORS: *MUSTARD AGENTS, *AIR POLLUTION CONTROL
EQUIPMENT, EXHAUST GASES, GAS CHROMATOGRAPHY,
MONITORS, AUTOMATION, OPERATIONAL TEST AND
EVALUATION

(U)

THE DETAILS OF DESIGN, DEVELOPMENT AND TESTING OF
AN AUTOMATED STACK ANALYZER CAPABLE OF MONITORING
MUSTARD GAS AT LEVELS OF 0.03 MG/CU.M. ARE GIVEN.
OPERATING CONDITIONS AND ANALYTICAL PROCEDURE ARE
GIVEN. RESULTS ARE DESCRIBED. THE TRACOR
270HA ATMOSPHERIC ANALYZER, BY SEVERAL
MODIFICATIONS, WAS TRANSFORMED INTO THE MODEL
275HA MUSTARD ANALYZER, FOUND TO GIVE ADEQUATE
RESULTS. (AUTHOR)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A030 557 13/2 6/19

ARMY MEDICAL INTELLIGENCE AND INFORMATION AGENCY
WASHINGTON D C

MAXIMUM PERMISSIBLE CONCENTRATIONS OF
ATMOSPHERIC POLLUTANTS (PREDEL NO DOPUSTIMYYE
KONTSENTRATSII ARMOSFERYKH ZAGRYAZNENIY),

(U)

SEP 76 23P IZMEROV, N. F. ;
REPT. NO. USAMIIA-K-6558

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF MEDYIZ (USSR) P3-4 73-93
1961.

DESCRIPTORS: *AIR POLLUTION, *AIR POLLUTION
EFFECTS(ANIMALS), HUMANS, PHYSIOLOGICAL EFFECTS,
THRESHOLDS(PHYSIOLOGY),
CONCENTRATION(COMPOSITION), TOXICITY,
RECOVERY, AUTOMOBILE EXHAUST, INDUSTRIAL PLANTS,
HYDROCARBONS, NAPHTHALENES, AVIATION GASOLINE,
GASOLINE, USSR, TRANSLATIONS

(U)

IDENTIFIERS: NAPHTHA

(U)

CHRONIC EXPOSURE TO GALOSHA NAPHTHA VAPOR IN A
CONCENTRATION OF 106.5 MG CU M FOR 5 MONTHS FOR 6
HOURS A DAY CAUSES FUNCTIONAL CHANGES OF THE
CONDITIONED REFLEXIVE ACTIVITY IN EXPERIMENTAL
ANIMALS THAT BUILD IN PROPORTION TO EXPOSURE AND
APPEAR TWO WEEKS AFTER TERMINATING EXPOSURE. THE
REFLEX ACTION OF GALOSHA NAPHTHA VAPOR ON LIGHT
SENSITIVITY OF THE EYE IS ONLY OBSERVED AT A
CONCENTRATION OF 56 MG/CUM OR HIGHER. THE MOST
SENSITIVE INDICATOR FOR ESTABLISHING THE MAXIMUM
PERMISSIBLE CONCENTRATION OF GASOLINE VAPOR IN
ATMOSPHERIC AIR IS THE THRESHOLD OF ODOR. TAKING
INTO ACCOUNT THE NEED FOR A CERTAIN RESERVE FACTOR
AND THE SLIGHT DIFFERENCE IN THE THRESHOLD OF ODOR
FOR THE INVESTIGATED TYPES OF GASOLINE, ONE CAN
RECOMMEND 5 MG/CU M (IN RECALULATION FOR CARBON)
AS THE MAXIMUM SINGLE PERMISSIBLE CONCENTRATION FOR
THE TYPES OF LOW SULFUR PETROLEUM GASOLINE.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A031 233 21/2 21/5 13/2
CALIFORNIA UNIV IRVINE COMBUSTION LAB

MECHANISMS OF EXHAUST POLLUTANTS AND PLUME
FORMATION IN CONTINUOUS COMBUSTION.

(U)

DESCRIPTIVE NOTE: INTERIM SCIENTIFIC REPT. NO. 2, 1 MAY
75-28 FEB 76,

JUN 76 84P SAMUELSEN, G. S. ;
REPT. NO. UCI-ARTR-76-10
CONTRACT: AF-AFOSR-2710-74
PROJ: AF-9711
TASK: 971102
MONITOR: AFOSR TR-76-1122

UNCLASSIFIED REPORT

DESCRIPTORS: *COMBUSTION, *GAS TURBINES,
*COMBUSTORS, *EMISSION, *AIR POLLUTION, *EXHAUST
PLUMES, MATHEMATICAL MODELS, MATHEMATICAL
PREDICTION, METHANE, PROPANE, OXIDATION,
NITROGEN OXIDES, TURBULENT FLOW, FLOW FIELDS,
MASS TRANSFER, SPECTRUM SIGNATURES, COMBUSTION
PRODUCTS, EXHAUST GASES
IDENTIFIERS: CONTINUOUS COMBUSTION,
BACKMIXING

(U)

(U)

AN ANALYTICAL AND EXPERIMENTAL STUDY IS BEING
CONDUCTED TO PROMOTE AN UNDERSTANDING OF THE
PROCESSES GOVERNING THE EMISSION CHARACTERISTICS OF
CONTINUOUS COMBUSTION POWER SOURCES AND THUS PROVIDE
A BASIS FOR REDUCING ADVERSE ENVIRONMENTAL EFFECTS
AND FOR CONTROLLING PLUME SIGNATURES RESULTING FROM
AIRCRAFT OPERATIONS. THE MODELING DEVELOPMENT CAN,
IN ADDITION, BE READILY ADAPTED TO DUMP COMBUSTOR AND
GAS TURBINE COMBUSTION. THE CONFIGURATION CHOSEN
FOR THE STUDY IS AN OPPOSED-JET LABORATORY COMBUSTOR
(OJC). THREE NUMERICAL PROGRAMS ARE USED FOR
MODELING PURPOSES. THE CURRENT YEAR HAS EMPHASIZED
THE UTILITY AND RANGE OF APPLICABILITY OF THE
NUMERICAL METHODS FOR THE CASE OF ISOTHERMAL FLOW.
EDDY VISCOSITY MODELS AND BOUNDARY CONDITION
SPECIFICATION HAVE RECEIVED THE GREATEST EMPHASIS IN
A SERIES OF SYSTEMATIC TEST OF PREDICTION AGAINST
EXPERIMENT. THE NUMERICAL METHODS ARE CURRENTLY
BEING EXPANDED TO INCLUDE PROPANE AS WELL AS METHANE
OXIDATION KINETICS. EVALUATION OF THE NUMERICAL
CODES FOR THE CASE OF HOT, REACTING FLOW WILL BE THE
EMPHASIS OF THE CONTINUATION YEAR. PREHEAT
CAPABILITY HAS BEEN ADDED TO THE EXPERIMENTAL
DIMENSION OF THE STUDY.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A031 860 21/4 6/20
CALIFORNIA UNIV IRVINE

TOXIC HAZARDS RESEARCH UNIT ANNUAL
TECHNICAL REPORT: 1976.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 75-MAY 76,
SEP 76 182P MACEWEN, J. D. ; VERNOT, E.

H. ;

CONTRACT: F33615-76-C-5005
MONITOR: AMRL TR-76-57

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: INCLUDES ERRATA SHEET DATED SEP
76.

DESCRIPTORS: *JET ENGINE FUELS, *TOXIC HAZARDS,
*ROCKET PROPELLANTS, LONG RANGE(TIME), LIVER,
NITROTOLUENES, METHYL HYDRAZINES, CARCINOGENS,
TOXICITY, COAL TAR, ORAL DOSAGE, INHALATION,
SKIN TESTS, NITROSAMINES, CHLORIDES, FLUORIDES,
ALUMINA, SKIN(ANATOMY), INDUSTRIAL HYGIENE,
AIR POLLUTION, MUNITIONS INDUSTRY, HAZARDOUS
MATERIALS TRANSPORTATION, GROWTH(PHYSIOLOGY),
LABORATORY ANIMALS

(U)

IDENTIFIERS: JP-4 FUELS, RJ-4 FUELS, RJ-5 FUELS,
HYDRAZINE/1-1-DIMETHYL, NITROSAMINE/DIMETHYL,
TETRANITRO METHANE, METHYL NITRATE

(U)

THE RESEARCH PROGRAMS OF THE TOXIC HAZARDS
RESEARCH UNIT (THRU) FOR THE PERIOD OF JUNE
1975 THROUGH MAY 1976 ARE REVIEWED IN THIS REPORT.
CHRONIC TOXICITY EXPERIMENTS WERE CONDUCTED USING
JP-4, RJ-4 (PERHYDROMETHYLCYCLOPENTADIENE)
AND RJ-5 (REDUCED DIMERS OF BICYCLOPENTADIENE)
JET FUELS. STUDIES WERE CARRIED OUT ON THE
ONCOGENICITY OF HYDRAZINE, 1,1-DIMETHYLHYDRAZINE AND
COAL TAR AEROSOL. THE HEPATOTOXICITY OF
DIMETHYLNITROSAMINE WAS INVESTIGATED BY THE ORAL
ROUTE AND, IN CONJUNCTION WITH 1,1-DIMETHYLHYDRAZINE,
BY THE INHALATION ROUTE. ACUTE RODENT TOXICITIES OF
HYDROGEN CHLORIDE, HYDROGEN FLUORIDE AND THEIR
MIXTURES WITH AND WITHOUT ALUMINA DUST WERE
DETERMINED. THE ACUTE EFFECTS OF TETRANITROMETHANE,
THE ISOMERIC NITROTOLUENES AND METHYL NITRATE BY
VARIOUS ROUTES OF ADMINISTRATION WERE EXAMINED.
ORAL, CUTANEOUS AND INHALATION TOXICITY
DETERMINATIONS AND SKIN CORROSION STUDIES WERE MADE
ON A NUMBER OF TRANSPORTABLE CHEMICAL AGENTS.
(AUTHOR)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A031 923 21/5 13/2
NATIONAL AVIATION FACILITIES EXPERIMENTAL CENTER ATLANTIC
CITY N J

AMBIENT TEMPERATURE AND HUMIDITY CORRECTION
FACTORS FOR EXHAUST EMISSIONS FROM TWO
CLASSES OF AIRCRAFT TURBINE ENGINES.

(U)

DESCRIPTIVE NOTE: FINAL REPT. FEB 74-AUG 75,
OCT 76 113P ALLEN, LOUIS ; SLUSHER, GERALD
R. ;

REPT. NO. FAA-NA-76-16

PROJ: FAA-201-521-000

MONITOR: FAA-RD 76-149

UNCLASSIFIED REPORT

DESCRIPTORS: *AIRCRAFT ENGINES, *AIR POLLUTION,
*EXHAUST GASES, CARBON MONOXIDE, HUMIDITY,
TEMPERATURE, HYDROCARBONS, TURBOFAN ENGINES,
TURBOJET ENGINES, NITROGEN OXIDES,
TABLES(DATA), SAMPLING, PRESSURE

(U)

IDENTIFIERS: J-57-43 ENGINES, JT3D ENGINES,
TF-30-P1 ENGINES, GAS TURBINE ENGINES

(U)

CORRECTION COEFFICIENTS TO REDUCE THE PRODUCTION OF
EXHAUST EMISSIONS TO STANDARD-DAY CONDITIONS FOR
AMBIENT TEMPERATURE AND HUMIDITY WERE DEVELOPED FOR
TWO CLASSES OF AIRCRAFT TURBINE ENGINES.
CORRELATION AND MULTIPLE REGRESSION METHODS WERE
USED IN THE ANALYSIS OF EMISSION MEASUREMENTS
RECORDED FROM TWO TURBINE ENGINES, OPERATED UNDER
NATURALLY OCCURRING ENVIRONMENTAL CONDITIONS,
STARTING IN THE WINTER AND CONTINUING THROUGH THE
SUMMER SEASON. CORRECTION FACTORS WERE ESTABLISHED
FOR THE EMISSION INDEX (EI) AND POWER INDEX (PI)
FOR CARBON MONOXIDE (CO), TOTAL HYDROCARBONS
(THC), AND NITROGEN OXIDES (NOX) FOR EACH OF
FIVE ENGINE POWER CONDITIONS OF IDLE, APPROACH,
CRUISE, MAXIMUM CONTINUOUS, AND TAKEOFF. AMBIENT
TEMPERATURE PRODUCED THE DOMINANT EFFECT ON ALL
GASEOUS EMISSIONS. EI AND PI FOR THC REQUIRED
THE GREATEST MAGNITUDE OF AMBIENT TEMPERATURE
CORRECTION FACTORS. HUMIDITY HAD A SIGNIFICANT
SECONDARY EFFECT ON THE GENERATION OF NOX).
THE EFFECTS OF BAROMETRIC PRESSURE WERE WITHIN
EXPERIMENTAL ERROR FOR THE MINIMAL RANGE OF PRESSURES
ENCOUNTERED. THE CORRECTION COEFFICIENTS
ESTABLISHED FROM A TF30-P1 ENGINE DATA BASE WERE
DETERMINED TO BE APPLICABLE FOR CORRECTION OF
JT8D ENGINE EMISSIONS.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A032 657 6/20 6/6 13/2 2/4
CALIFORNIA UNIV RIVERSIDE STATEWIDE AIR POLLUTION RESEARCH
CENTER

DETERMINATION OF EFFECTS OF DESIGNATED
POLLUTANTS ON PLANT SPECIES.

(U)

DESCRIPTIVE NOTE: ANNUAL REPT. NO. 1, 1 SEP 75-30 JUN
76,

OCT 76 58P GRANETT, A. L. ; TAYLOR, O.
C. ;

CONTRACT: F33615-76-C-5005

PROJ: AF-6302

TASK: 630204

MONITOR: AMRL TR-76-66

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON ENVIRONMENTAL
TOXICOLOGY.

DESCRIPTORS: *TOXICITY, *PLANTS(BOTANY),
*EXHAUST GASES, HYDROGEN CHLORIDE, AIR POLLUTION,
TOXICOLOGY, EXPERIMENTAL DATA, HYDROGEN FLUORIDE,
GREENHOUSES, TOXIC TOLERANCES, ALUMINUM OXIDES,
PLANT GROWTH

(U)

IDENTIFIERS: MISSILES, *AIR POLLUTION
EFFECTS(PLANTS), *PHYTOTOXINS, PLANT DAMAGE,
EXHAUST EMISSIONS, MAXIMUM PERMISSIBLE EXPOSURE
LEVEL, PLANT NUTRITION

(U)

THE PHYTOTOXIC RESPONSES OF SELECTED PLANTS TO
MISSILE EXHAUST PRODUCTS WERE STUDIED. THE PLANTS
INCLUDED BUT WERE NOT LIMITED TO ORNAMENTAL,
VEGETABLE, AND FIELD CROPS FOUND IN THE VICINITY OF
VANDENBERG AIR FORCE BASE AND WERE GROWN IN
GREENHOUSES EQUIPPED WITH EVAPORATIVE COOLERS WITH
ACTIVATED CHARCOAL AIR FILTERS. THE MISSILE
PRODUCTS INVESTIGATED WERE HYDROGEN CHLORIDE AND
HYDROGEN FLUORIDE GASES AND ALUMINUM OXIDE AEROSOLS,
ALONE AND IN VARIOUS COMBINATIONS OF TOXICANTS.
THE GASES WERE GENERATED BY THE VOLATILIZATION OF
ACID LIQUIDS INTO A HOT AIR STREAM AND THE AEROSOLS
WERE GENERATED USING NITROGEN GAS TO CARRY THE
PARTICLES THROUGH A CYLINDER HAVING A RESERVOIR OF
PARTICLES. THE GASES WERE MONITORED IN THE EXPOSURE
CHAMBERS BY TRAPPING AND TITRATING KNOWN AIR SAMPLES.
MOST STUDIES CONCENTRATED ON HCL GAS ALONE.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A033 121 21/5
NATIONAL AVIATION FACILITIES EXPERIMENTAL CENTER ATLANTIC
CITY N J

ANALYTICAL STUDY OF MIXED-FLOW JT8D
EXHAUST EMISSIONS MEASUREMENTS FOR FIXED-
PROBE REQUIREMENTS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JAN-JUN 73,
OCT 76 43P SLUSHER, GERALD R. ;
REPT. NO. FAA-NA-75-12
MONITOR: FAA-RD 76-140

UNCLASSIFIED REPORT

DESCRIPTORS: *TURBOFAN ENGINES, *EXHAUST PLUMES,
*EXHAUST GASES, SAMPLING
IDENTIFIERS: JT-8D ENGINES

(U)

(U)

A METHOD IS OUTLINED TO OPTIMIZE THE SHAPE, SIZE,
AND LOCATION OF FIXED PROBE FOR ACQUIRING
REPRESENTATIVE EMISSION SAMPLES FROM THE EXHAUST OF A
MIXED-FLOW JT8D-11 TURBOFAN ENGINE. FAMILIES OF
GEOMETRIC SHAPES AND MUTUALLY EXCLUSIVE PROBE
CONFIGURATIONS ARE OVERLAID UPON A 177-POINT TRAVERSE
GRID. A SIGNIFICANCE RATIO IS CALCULATED AND USED
TO RANK RESULTS. REPRESENTATIVE AND
NONREPRESENTATIVE AREAS OF THE EXHAUST PLUME ARE
DEFINED. PROBE CONFIGURATIONS ARE OVERLAID UPON THE
TRAVERSE GRID AND RANKED TO OBTAIN A REPRESENTATIVE
CONFIGURATION. AN AREA OF THE JT8D EXHAUST
PLUME SUITABLE FOR ACQUIRING REPRESENTATIVE EMISSION
SAMPLES WAS FOUND WHICH REDUCES THE OVERALL 177
SAMPLE POINTS TO 20 SAMPLE POINTS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A034 550 21/8.2 13/2
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX

LABORATORY AND FIELD EVALUATION OF HYDROGEN
CHLORIDE MEASUREMENT INSTRUMENTATION. (U)

DESCRIPTIVE NOTE: SUMMARY REPT. JUN 74-APR 76,
DEC 76 35P MILLER, RICHARD L. ; LIGDAY,
ROBERT C. ;
REPT. NO. SAM-TR-76-40
PROJ: 7164
TASK: 16

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR POLLUTION, *HYDROGEN CHLORIDE,
*MONITORS, *ROCKET EXHAUST, CHEMILUMINESCENCE,
COULOMETERS, AIRBORNE, GROUND SUPPORT EQUIPMENT,
SOLID PROPELLANT ROCKET ENGINES, BOOSTER ROCKET
ENGINES, LAUNCH VEHICLES, EXHAUST GASES,
MONITORING (U)
IDENTIFIERS: TITAN 3, WUSAM71641606,
PE62202F (U)

THIS REPORT DESCRIBES THE OPERATING CHARACTERISTICS
OF THE MICROCOULOMETRIC AND CHEMILUMINESCENT HCL
ANALYZERS AND SUMMARIZES RESULTS FROM THE SEVERAL
LABORATORY AND FIELD EVALUATION STUDIES. THE FIELD
TEST PROGRAM HAS PROVIDED A CLEAR INDICATION OF
INSTRUMENTATION PREFERENCE FOR SPECIFIC APPLICATIONS,
BUT ONLY PRELIMINARY INSIGHT INTO THE BEHAVIOR OF THE
EXHAUST CLOUD FOLLOWING SOLID BOOSTER ROCKET
LAUNCHES. THE DETECTION CONCEPT AND FAST RESPONSE
CHARACTERISTICS OF THE CHEMILUMINESCENT ANALYZER MAKE
IT CLEARLY SUPERIOR FOR THE AIRBORNE MONITORING
APPLICATION. THE COULOMETER BY CONTRAST HAS PROVEN
ITSELF AS A VERSATILE LABORATORY TOOL AND A USEFUL
FIELD INSTRUMENT FOR HCL DETECTION IN GROUND
MONITORING APPLICATIONS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A034 726 13/2 21/5
ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE
STATION TENN

EVALUATION OF PROBE SAMPLING VERSUS OPTICAL
IN SITU MEASUREMENTS OF NITRIC OXIDE
CONCENTRATIONS IN A JET ENGINE COMBUSTOR
EXHAUST.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 2 JUL 74-16 FEB 75,
JAN 77 45P FEW, J. D. ; BRYSON, R. J.
; MCGREGOR, W. K. ;
REPT. NO. AEDC-TR-76-180
PROJ: ARO-R32-P55A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH ARO,
INC., TULLAHOMA, TENN. REPT. NO. ARO-ETF-TR-
76-76.

DESCRIPTORS: *NITROGEN OXIDES, *EXHAUST GASES,
*PROBES, OPTICAL EQUIPMENT, SAMPLERS,
CONCENTRATION (COMPOSITION), COMPARISON, JET
ENGINES, AIR POLLUTION, CHEMILUMINESCENCE,
ABSORPTION SPECTRA, PERFORMANCE TESTS, BAND
SPECTRA, GAS ANALYSIS

(U)

IDENTIFIERS: *AIR POLLUTION DETECTION, DESIGN
CRITERIA

(U)

MEASUREMENTS OF NITRIC OXIDE (NO) CONCENTRATIONS
WERE MADE AT THE EXHAUST OF A JET ENGINE COMBUSTOR BY
CONVENTIONAL GAS-SAMPLING PROBE AND CHEMILUMINESCENT
ANALYZER METHODS, BY OPTICAL RESONANCE ABSORPTION
THROUGH ABSORPTION CELLS LOCATED WITHIN THE GAS
SAMPLE TRANSFER LINE, AND BY OPTICAL RESONANCE
ABSORPTION DIRECTLY THROUGH THE COMBUSTOR EXHAUST.
THE COMBUSTOR WAS EXHAUSTED TO ATMOSPHERIC PRESSURE
AND WAS OPERATED AT AN INLET TEMPERATURE NEAR 600F,
A TOTAL PRESSURE OF ABOUT 3 TO 4 ATM, AND AT FUEL-TO-
AIR RATIOS (F/A) FROM 0.01 TO 0.05. A TUBULAR
INLET, LIQUID-COOLED, STAINLESS STEEL SAMPLING PROBE
WAS INSERTED INTO THE GAS STREAM AT THE COMBUSTOR
EXIT. THE OPTICAL TECHNIQUE USED WAS THE RESONANCE
ABSORPTION METHOD FOR THE (0,0) GAMMA-BAND OF
NO AT WAVELENGTHS RANGING FROM 2,200 TO 2,270 A.
THE RESULTS SHOWED THAT WITHIN THE SAMPLING LINE
BOTH THE CHEMILUMINESCENT GAS ANALYZER AND THE
OPTICAL ABSORPTION METHOD GAVE NO CONCENTRATIONS
THAT AGREED WITHIN ABOUT 20 PERCENT.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

D-A035 210 13/2 14/2 21/7
HARRY DIAMOND LABS ADELPHI MD

DIESEL SMOKE METERS FOR ARMY USE.

(U)

DESCRIPTIVE NOTE: TECHNICAL MEMO.,
NOV 76 78P MCGUIRE, DENNIS W. ;
EPT. NO. HDL-TM-76-17

UNCLASSIFIED REPORT

DESCRIPTORS: *SMOKE, *MEASURING INSTRUMENTS,
*DIESEL ENGINES, *EXHAUST GASES, SMOKE ABATEMENT,
AIR POLLUTION, VEHICLE EQUIPMENT, MAINTENANCE,
MILITARY VEHICLES, POLLUTANTS, AIR QUALITY,
QUALITY CONTROL, INSPECTION, PHOTODETECTORS,
DETECTION, EMISSION
IDENTIFIERS: CELESCO PORTABLE SMOKE METERS

(U)

(U)

A STUDY WAS PERFORMED TO DETERMINE THE SUITABILITY OF EXISTING DIESEL SMOKE MEASURING EQUIPMENT AND TECHNIQUES FOR ARMY USE IN A PROGRAM OF DIESEL SMOKE ABATEMENT. MOST COMMERCIAL EQUIPMENT AND VIRTUALLY ALL KNOWN TECHNIQUES WERE CONSIDERED IN VIEW OF POSSIBLE ENFORCEMENT, MAINTENANCE, OR TRAINING APPLICATIONS. ATTEMPTS WERE MADE ALSO TO CRITICALLY EVALUATE THE PARTICULAR NATURE OF THE ARMY SMOKE PROBLEM SO THAT RECOMMENDATIONS COULD BE PRESENTED IN A REALISTIC PERSPECTIVE. THIS REPORT GIVES A DETAILED SUMMARY OF THE RESULTS OF THIS STUDY. SMOKE MEASURING TECHNIQUES AND AVAILABLE COMMERCIAL EQUIPMENT ARE REVIEWED, AND TECHNICAL CRITICISMS ARE GIVEN. PREVIOUS OVERALL STUDIES OF THE TECHNICAL ASPECTS OF SMOKE MEASUREMENT ALSO ARE REVIEWED AND COMPARED. EXISTING SMOKE ABATEMENT PROGRAMS, INCLUDING FEDERAL AND STATE, AND THEIR ASSOCIATED INSPECTION PROCEDURES ARE EXAMINED, AND ATTEMPTS AT THEIR TECHNICAL AND PRACTICAL EVALUATION ARE PRESENTED. THE ARMY SMOKE PROBLEM IS EXAMINED BY REVIEWING THE AVAILABLE TECHNICAL STUDIES OF THE PROBLEM AND BY CONSIDERING INFORMATION OBTAINED FROM VARIOUS KNOWLEDGEABLE INDIVIDUALS THROUGH INTERVIEWS. SEVERAL NOVEL TECHNIQUES FOR THE MEASUREMENT OF DIESEL SMOKE ARE SUGGESTED FOR CONSIDERATION.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A036 393 21/5 13/2
AIR FORCE CIVIL ENGINEERING CENTER TYNDALL AFB FLA

THE EFFECT OF NAVY AND AIR FORCE AIRCRAFT
ENGINE TEST FACILITIES ON AMBIENT AIR
QUALITY.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 1 JUN 75-31 JUL 76,
OCT 76 24P GREMS, BRADFORD C. , III;
NAUGLE, DENNIS F. ;
REPT. NO. AFCEC-TR-76-36

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPERSEDES REPT. NO. AFCEC-TM-
76-7.

DESCRIPTORS: *JET ENGINES, *TEST FACILITIES, *AIR
QUALITY, AIR POLLUTION, POLLUTION ABATEMENT,
NITROGEN OXIDES, HYDROCARBONS, CARBON MONOXIDE,
PARTICULATES, COMPUTERIZED SIMULATION,
MATHEMATICAL PREDICTION, ENVIRONMENTAL IMPACT
STATEMENTS
IDENTIFIERS: SULFUR DIOXIDE

(U)
(U)

AN INVESTIGATION OF THE AIR QUALITY IMPACT OF
DOD TURBINE ENGINE TEST FACILITIES WAS PERFORMED.
EMISSIONS AND POLLUTANT DISPERSION FROM TEST CELLS
AND AIRCRAFT AT SIX DOD INSTALLATIONS WERE
PREDICTED USING A SOPHISTICATED COMPUTER MODEL.
PREDICTED POLLUTANT CONCENTRATIONS ARE COMPARED TO
AMBIENT AIR QUALITY STANDARDS AND MEASURED AMBIENT
VALUES FOR HYDROCARBONS, OXIDES OF NITROGEN, AND
PARTICULATES. JET ENGINE TEST CELLS HAVE NO
SIGNIFICANT IMPACT ON AIR QUALITY FOR ANY POLLUTANT
AT ANY LOCATION STUDIED. TEST CELL POLLUTANT
CONCENTRATIONS ARE CONSIDERABLE LESS THAN THE LEVELS
GENERATED BY AIRCRAFT OPERATIONS AND WELL BELOW
MEASURED AMBIENT AIR QUALITY LEVELS IN THE AREAS
STUDIED. AMBIENT CARBON MONOXIDE AND SULFUR DIOXIDE
LEVELS RESULTING FROM TEST CELL EMISSIONS ARE
INSIGNIFICANT. CONTROL OF ANY POLLUTANTS GENERATED
BY TEST CELLS WOULD NOT MEASURABLY IMPROVE AMBIENT
AIR QUALITY. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A036 397 9/2

NEW MEXICO UNIV ALBUQUERQUE ERIC H WANG CIVIL ENGINEERING
RESEARCH FACILITY

DEVELOPMENT OF CONTOURING CAPABILITY FOR
DISPLAYING RESULTS OF AIR QUALITY
ASSESSMENT MODEL.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 1 JUL 75-1 JUN 76,

OCT 76 40P DUNPHY, EDWARD P. ;

REPT. NO. CERF-EE-8

CONTRACT: F29601-76-C-0015

PROJ: 2103

TASK: 5A

MONITOR: AFCEC

TR-76-25

UNCLASSIFIED REPORT

DESCRIPTORS: *AIR QUALITY, *DATA DISPLAYS,
CONTOURS, ASSESSMENT, MODELS, COMPUTER GRAPHICS,
ALGORITHMS, AIR POLLUTION, AIRCRAFT EXHAUST,
EXHAUST PLUMES, AIRPORTS

(U)

IDENTIFIERS: WUAFCEC21035A23, PE63723F

(U)

A COMPUTER CONTOURING PLOT PACKAGE HAS BEEN
DEVELOPED TO DISPLAY THE RESULTS OF THE AIR
QUALITY ASSESSMENT MODEL (AQAM). THIS
PROGRAM ACCEPTS INPUT DATA CARDS OR AN INPUT DATA
TAPE GENERATED ON AN AQAM RUN. UP TO 20 UNEQUAL
CONTOUR LEVELS WITH TENSION PARAMETERS AND DASHLINE
PATTERNS MAY BE SPECIFIED IN EACH CONTOUR PLOT. THE
CONTOURING PACKAGE IS WRITTEN FOR THE CDC 6600
COMPUTER SYSTEM. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A036 504 13/2 4/1
WYOMING UNIV LARAMIE DEPT OF PHYSICS AND ASTRONOMY

ASSESSMENT OF ATMOSPHERIC CONDENSATION NUCLEI
ASSOCIATED WITH JET AIRCRAFT TRAFFIC. (U)

DESCRIPTIVE NOTE: ANNUAL REPT. MAY 76-APR 77,
APR 77 12P HOFMANN, D. J. ; ROSEN, J.

M. ;
REPT. NO. CN-7
CONTRACT: N00014-76-C-0170
PROJ: NR-211-151

UNCLASSIFIED REPORT

DESCRIPTORS: *AEROSOLS, *AIR POLLUTION,
*CONDENSATION NUCLEI, *JET ENGINE EXHAUST,
PARTICLE SIZE, STRATOSPHERE, TROPOSPHERE,
SULFURIC ACID, SULFATES, EXHAUST GASES, BALLOON
EQUIPMENT, MONITORING, REMOTE DETECTORS,
MEASUREMENT, ATMOSPHERIC MOTION (U)
IDENTIFIERS: PARTICULATES, AIR POLLUTION
DETECTION (U)

MEASUREMENT OF CONDENSATION NUCLEI (CN) IN THE
SIZE RANGE $R \geq 0.01$ MICROMETERS BY BALLOON-
BORNE DETECTORS FROM A NUMBER OF STATIONS SUGGESTS
THE FOLLOWING: (A) CN PROFILES
(CONCENTRATION VS ALTITUDE) TO 30KM ARE SOMEWHAT
UNIFORM GLOBALLY WITH TYPICALLY HIGH (APPROXIMATELY
1000/CC) CONCENTRATIONS IN THE TROPOSPHERE AND
TYPICALLY LOW (APPROXIMATELY 10/CC)
CONCENTRATIONS IN THE STRATOSPHERE. (B) THE
TROPOSPHERE APPEARS TO SERVE AS A CN SOURCE FOR THE
STRATOSPHERE. (C) CN OCCURRING IN TROPOSPHERIC
LAYERS ARE PARTIALLY VOLATILE AT 150C. (D) A
CN LAYER OBSERVED IN THE STRATOSPHERE AT 22KM WAS
APPARENTLY DUE TO THE JET ENGINE EMISSIONS OF A HIGH
FLYING AIRCRAFT. IN ADDITION, LARGER PARTICLES (R
 ≥ 0.15 MICROMETERS) IN THE STRATOSPHERIC
SULFATE LAYER HAVE CONTINUED TO DECAY UNIFORMLY
FOLLOWING AN INJECTION APPARENTLY DUE TO A VOLCANIC
ERUPTION IN OCTOBER 1974. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-A037 694 21/5 13/2
AIR FORCE CIVIL ENGINEERING CENTER TYNDALL AFB FLA

PREDICTION OF TEST CELL VISIBLE
EMISSIONS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN-NOV 76,
DEC 76 41P FINCH, SAMUEL P. , III; EYL,
ARLAND W. , JR;
REPT. NO. AFCEC-TR-76-47
PROJ: 2103
TASK: 7A

UNCLASSIFIED REPORT

DESCRIPTORS: *JET ENGINE EXHAUST, *AIR POLLUTION,
EXHAUST PLUMES, ENVIRONMENTAL PROTECTION,
PARTICULATES, SOOT, AUTOMOBILE EXHAUST,
PREDICTIONS, SMOKE

(U)

IDENTIFIERS: WUAFCEC21037A29, PE63723F

(U)

A THEORETICAL CORRELATION BETWEEN JET ENGINE TEST
CELL PLUME OPACITY AND SOCIETY OF AUTOMOTIVE
ENGINEERS (SAE) ENGINE SMOKE NUMBER (SN) WAS
DEVELOPED. INTERMEDIATE RESULTS PROVIDE SOOT
LOADING AT THE EXHAUST PLANE OF THE ENGINE, ENGINE
EXHAUST FLOW RATES AND TEST CELL TOTAL AIR FLOW RATE.
THE SPECIFIC PARTICLE EXTINCTION COEFFICIENT WHICH
CORRELATES LIGHT SCATTERING PROPERTIES WITH SOOT
LOADING IS THE MOST DIFFICULT PARAMETER TO DEFINE.
A VALUE PREDICTED FROM MIE THEORY IS USED FOR
CORRELATIONS CLOSE TO THE EXHAUST PLANE OF THE
ENGINE. AT THE EXIT PLANE OF THE EXHAUST STACK
AGGLOMERATION AND SCOURING CHANGE THE PARTICLE SIZE
DISTRIBUTION AND INDIVIDUAL PARTICLE DENSITY SO THAT
THEORETICAL PREDICTION IS DIFFICULT. THE VALUE FOR
SPECIFIC PARTICLE EXTINCTION COEFFICIENT AT THE
EXHAUST STACK WAS CHOSEN BASED ON WHAT LITTLE
EMPIRICAL DATA WAS AVAILABLE. WHEN ADDITIONAL DATA
BECOMES AVAILABLE, IT SHOULD BE POSSIBLE TO DEFINE
THIS PARAMETER MORE PRECISELY. (AUTHOR)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000M1

AD-B002 928 17/5 21/2
AIR FORCE ARMAMENT LAB EGLIN AFB FLA

OPERATION OF AN INFRARED THERMAL SCANNER FOR
PLUME MEASUREMENTS. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 JUL 73-JUN 74,
DEC 74 35P MARTIN, CHARLES W. ; ASKEW,
RAYMOND F. ; EBEOGLU, DAVUT B. ;
REPT. NO. AFATL-TR-74-204
PROJ: AF-1921
TASK: 192103

UNCLASSIFIED REPORT

DESCRIPTORS: (*INFRARED SIGNATURES, PLUMES),
(*EXHAUST GASES, EMISSIVITY), (*THERMAL TARGETS,
CALIBRATION), (*AERIAL TARGETS, TARGET
SIGNATURES), INFRARED SCANNING, INFRARED IMAGES,
SIGNAL PROCESSING, PHOTOVOLTAIC EFFECT (U)
IDENTIFIERS: MIDDLE INFRARED REGION, INFRARED
CAMERAS, PHOTOVOLTAIC DETECTORS (U)

A DATA PROCESSING AND SYSTEM CALIBRATION EFFORT HAS
BEEN CONDUCTED TO PROVIDE SPATIALLY ACCURATE
QUANTITATIVE RADIANT INTENSITY DATA ON EXTENDED
INFRARED SOURCES. THIS CAPABILITY HAS BEEN
DEVELOPED TO PERMIT THE EXPERIMENTAL STUDY OF THE
INFRARED EXHAUST PLUMES OF PROPULSION SYSTEMS. THE
OBJECTIVE OF THIS STUDY IS TO DEVELOP REALISTIC
INFRARED SIGNATURE SIMULATION FOR AERIAL TARGETS.
THIS REPORT DESCRIBES HOW NUMERICALLY ACCURATE
INFRARED IMAGERY MAY BE OBTAINED IN THE 4 TO 5.5
MICRON BAND WITH A BOFORS INFRARED IMAGING CAMERA
COUPLED TO AN ANALOG/DIGITAL DATA ACQUISITION SYSTEM.
THE GENERAL PROCEDURES ESTABLISHED TO CALIBRATE THE
INSTRUMENT AND THE DATA PROCESSING NOW AVAILABLE TO
THE USER ARE DESCRIBED IN DETAIL. (AUTHOR) (U)

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NAVAL SURFACE WEAPONS CENTER DAHLGREN LAB VA

THE DETECTION AND TRACKING OF STACK
EFFLUENT WITH A FORWARD LOOKING INFRARED
IMAGING SENSOR.

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DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUN 75 45P TACZAK, WILLIAM J. , JR. ;
HORMAN, STEPHEN R. ; HERNDON, STUART B. ;
DOERFLEIN, ROBERT D. ;
REPT. NO. NSWC/DL-TR-3313

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DESCRIPTORS: (*INFRARED DETECTION, *AIR
POLLUTION), (*GB AGENT, EFFLUENTS), (*FORWARD
LOOKING INFRARED SYSTEMS, *INFRARED IMAGES),
(*INFRARED SPECTROMETERS, GAS DETECTORS), SMOKE
STACKS, INFRARED TRACKING, SULFUR COMPOUNDS,
FLUORIDES, WATER VAPOR, GASES, MOLECULAR WEIGHT,
PLUMES, TRIANGULATION, POSITION FINDING,
DEMILITARIZATION, DESTRUCTION
IDENTIFIERS: AN/AAS-28, SULFUR
HEXAFLUORIDES

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EXPERIMENTAL RESULTS OF USING A FORWARD LOOKING
INFRARED (FLIR) THERMAL IMAGING SYSTEM TO MONITOR
THE SPRAY DRYER STACK EFFLUENT AT ROCKY MOUNTAIN
ARSENAL, COLORADO, ARE PRESENTED. THE EFFLUENT
WAS EMITTED IN THE DEMILITARIZATION PROCESS OF GB
NERVE GAS. SINCE THE EFFLUENT WAS MOSTLY WATER
VAPOR WITH VERY SMALL QUANTITIES OF RESIDUE GB, A
STRONG INFRARED ABSORBER THAT APPROXIMATED THE
MOLECULAR WEIGHT OF GB, SULFUR HEXAFLUORIDE
(SF6), WAS ADDED TO THE STACK TO AID TRACKING.
WITHOUT THE SF6, THE PLUME EXTENT WAS SEEN AS
READILY BY VISUAL MEANS AS WITH A FLIR. WITH
SF6 ADDED TO THE STACK, THE PLUME WAS TRACKED FROM
RANGES OF HUNDREDS OF YARDS TO SEVERAL MILES,
DEPENDING UPON THE METEOROLOGICAL AND BACKGROUND
CONDITIONS. FINALLY, TWO FLIR UNITS, IN
CONJUNCTION WITH A MOBILE AIR SAMPLER UNIT OF THE
ARMY ENVIRONMENTAL HYGIENE AGENCY, USED
TRIANGULATION TO SUCCESSFULLY LOCATE THE AREA WHERE
THE SPRAY DRYER PLUME REACHED GROUND LEVEL UNDER
SEVERAL METEOROLOGICAL CONDITIONS. FURTHERMORE, IT
WAS CONCLUDED THAT A THERMAL IMAGING DEVICE, COUPLED
WITH A HIGH SPECTRAL RESOLUTION SPECTROMETER, WOULD
BE USEFUL IN DETECTING AIR POLLUTION DURING DAY OR
NIGHT OPERATIONS. (AUTHOR)

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PROGRAM: PHASE I. SOUTH
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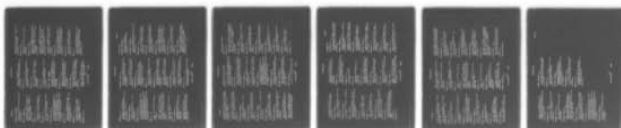
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